ENVIRON

July 7, 1998

By Federal Express

Ms. Sheri Bianchin, RPM
Mail Code SR-J6
USEPA Region V
77 West Jackson Blvd.
Chicago, IL 60604-3590

Re: Additional Items Requested in EPA's 4/28/98 Review of the Baseline Risk Assessment Deliverable. ACS NPL Site, Griffith, Indiana

Dear Ms. Bianchin:

Please find enclosed revised drafts of Section 3 (Exposure Assessment), Appendix B (Estimation of Air Emissions and Dispersion), and Appendix C (Exposure Equations), as requested in EPA's 4/28/98 "Review of the Baseline Risk Assessment Deliverable". The revisions are consistent with those proposed in our responses to comments submitted to USEPA on March 11 and June 2, 1998, and with the information in the facsimile sent on June 15, 1998.

We welcome the opportunity to discuss the additional information that has been provided to USEPA, and suggest scheduling a conference call at your convenience.

If you have any questions, please call me at (609) 243-9805.

Sincerely,

Kristen G. Edelmann

Kristen G. Edelmann
Senior Associate

cc: Patricia VanLeeuwen, USEPA
Vince Epps, IDEM
Steve Mrkvicka, Black & Veatch
ACS Technical Committee

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3.0 EXPOSURE ASSESSMENT

The purpose of the exposure assessment is to evaluate the nature and magnitude of potential exposures to constituents detected at the Site during the RI and subsequent Site characterization studies. The exposure assessment consists of the following components:

- Characterization of Exposure Setting (Section 3.1);
- Identification of Potential Exposure Routes and Pathways (Section 3.2);
- Exposure Concentrations (Section 3.3); and
- Estimation of Media Intake (Section 3.4).

The results of the exposure assessment are combined with the results of the toxicity assessment (Section 4) to characterize potential risk (Section 5).

3.1 Characterization of Exposure Setting

In the baseline risk assessment, the exposure setting is evaluated with respect to the general characteristics of the Site and Site surroundings, and potentially exposed populations, under both current and reasonably anticipated future land use conditions. Section 3.1.1 provides a general description of the current exposure setting at and around the Site. Section 3.1.2 describes the exposure setting under a reasonably anticipated future land use scenario. Hypothetically exposed populations under current and future conditions are summarized in Section 3.1.3.

3.1.1 Current Exposure Setting

The Site is located at 420 South Colfax Avenue, in an area of the Town of Griffith that historically has been developed primarily for industrial and commercial uses. The part of Griffith in which the Site is located is referred to as the "eastern portion of the Town" in the Master Plan for the Town of Griffith, Indiana (i.e., including all lands east of Broad Street between the Penn Central and C & E Railroads). The entire "eastern portion of the Town," including the Site, is zoned for industrial use. Maps showing the location and zoning of the Site are provided in Figures 3-1 and 3-2, respectively. For the purposes of the baseline risk assessment, on-site and off-site areas have been divided into seven Exposure Areas, as shown in Figure 3-3 and described in greater detail in Section 3.2.

ACS, which owns approximately 26 acres of the Site, and leases another four acres from CSX, began operations at the Site as a solvent recovery facility in May 1955. Through the nearly 42 years of continuous operation, ACS has modernized, modified, and expanded operations at the Site. For example, in the 1960s ACS added facilities to manufacture small batches of specialty chemicals, and in the 1970s built an epoxidation plant to produce a plasticizer. ACS currently employs over 40 full-time workers and intends to continue specialty chemical manufacturing and epoxidation operations at the Site. As a result, ACS has established a strong and consistent presence in the Town of Griffith.

The ACS property is bisected by the Chesapeake & Ohio (C & O) Railroad (see Figure 3-3, Areas 1 and 2). The active facility is located in Area 1, north of the railroad, and reportedly contains two areas where drums were buried: the On-Site Containment Area and the Still Bottoms/Treatment Lagoon Area. In the On-Site Containment Area, an estimated 400 to 1,000 drums containing sludge and semi-solids of unknown types are located approximately one to 5 feet below ground surface (Warzyn, Inc. 1991a; Focus Environmental 1997). The Still Bottoms Pond and Treatment Lagoon #1 were located in the mid-southern portion of Area 1, and were drained and filled in with crushed drums partially full of sludge materials in the early 1970s (Warzyn, Inc. 1991a). Currently, the Still Bottoms/Treatment Lagoon Area is covered by crushed gravel, aboveground holding tanks, and a parking lot. The surface throughout Area 1, including the On-Site Containment Area and Still Bottom Treatment Lagoon Area, is generally devoid of vegetation and covered by approximately six inches of aggregate and/or coarse sand and gravel. ACS provides regular maintenance of this cover.

The undeveloped portion of the ACS property (Area 2 on Figure 3-3) is located south of the C & O Railroad. This area includes the "Off-Site Containment Area," which was used for waste disposal between 1958 and 1975, when it was bermed and capped with clay (Warzyn, Inc. 1991a). A variety of wastes are reportedly present below the cover, including general refuse, still bottoms, ash from the on-site incinerator, and the remains of an estimated 25,000 to 55,000 drums (Focus Environmental 1997). According to ACS, Inc., most of the drums in Area 2 are not intact, having been punctured or crushed prior to disposal (Warzyn, Inc. 1992, Montgomery Watson 1995). Observations in test pits (Focus 1997) confirm this. Currently, Area 2 is generally covered by a one-foot deep clay cover and temporary spoils piles generated during interim remediation activities at the Site. The spoils piles have a PVC covering.

In addition to the ACS property, the Site includes two acres that also have a history of industrial use. These two acres are located south of the ACS property and adjacent to the Griffith Municipal Landfill (labeled "Area 3" on Figure 3-3). Kapica Drum, Inc. began drum reconditioning operations on this portion of the Site in 1951. Pazmey Corporation bought the property in February 1980 and continued drum reconditioning operations until March 1987, when Darija Djurovic purchased the property for automobile storage and repair.

Land surrounding the Site is currently zoned for industrial use, but historically has been used for a combination of industrial, residential, and recreational purposes. In the following paragraphs, current land uses in the vicinity of the Site are described in a clockwise fashion, beginning at the northeast corner. The area surrounding the Site and the roads and railroads immediately surrounding the Site are labeled in Figure 3-3. Zoning in the area is indicated in Figure 3-2 (where I-1 and I-2 indicate areas targeted for industrial use, while R-1 and R-2 indicate areas zoned for residential use).

Located northeast of the Site, beyond the intersection of Colfax Avenue and the Grand Trunk Railroad right-of-way, are the Oak Ridge Prairie County Park and the Griffith Airport. Immediately east of the Site and north of the C & O) Railroad right-of-way, the land is undeveloped and zoned general industrial. To the east of Colfax Avenue and south of the C & O Railroad right-of-way are several small businesses. To the east of Colfax Avenue and along Reder Road, several small businesses and several single family residences are present (this area is labeled Area 5A on Figure 3-3). South of the intersection of Reder Road and Colfax Avenue, on Arbogast Avenue, are a private residence and a small industrial building. The area was zoned for industrial use after the residences were built, with the intention that any future development in the area would be industrial. The pre-existing residences in the industrial zone are considered conforming uses, and a zoning ordinance cannot force changes in these existing uses. However, new residences would be considered non-conforming and the ordinance can prevent construction of a non-conforming use. In addition, if the pre-existing residential use is discontinued, the ordinance can also prevent it from being resumed (Sargent 1997).

To the west and southwest of the Site, south of the C & O Railroad right-of-way, are the Griffith Municipal Landfill and Town of Griffith Municipal Garage. Beyond the municipal landfill and west of the Chicago and Erie (C & E) Railroad right-of-way, are vacant land and a residential development (Area 6 on Figure 3-3). This area is zoned for residential use.

North of the C & O Railroad right-of-way to the west of the Site, and north of the Grand Trunk Railroad right-of-way (Area 5B on Figure 3-3) the land is primarily vacant,

and classified as wetlands. Further to the north, along Main Street, are small businesses and an industrial park.

3.1.2 Reasonably Anticipated Future Exposure Setting

Reasonably anticipated future exposure settings for evaluation in the baseline risk assessment have been developed based on USEPA's "Land Use in the CERCLA Remedy Selection Process" (USEPA 1995a). This guidance presents a framework and specific factors to be used in determining the reasonably anticipated land use for the purpose of estimating potential future risks. Based on USEPA guidance (1995a), a comprehensive review of information pertinent to future land use patterns on and around the Site has been conducted, as presented in Appendix A.

Site-specific information consulted in developing the reasonably anticipated future exposure setting at the ACS Site included the following:

- Master Plan for Future Land Use, Griffith, Indiana;
- Official Zoning Map for Town of Griffith;
- Personal communications with the Building Commissioner of Griffith;
- Information from the Northwestern Indiana Regional Planning Commission (NIRPC)[1];
- U.S. Census data;
- U.S. topographic, wetland inventory, and flood plain maps;
- Declarations of Land Use Restriction of Real Property; and
- Information from the Historic Landmarks Foundation of Indiana.

The Master Plan for Griffith (Vilizan-Leman 1975) is used by the Town government to guide future development in Griffith.

A comprehensive review of information pertinent to future land use patterns surrounding the Site confirms that the assumption of continued industrial land use at the Site is appropriate (see Appendix A). Given the history of industrial land use at the Site, ACS's plans for continuing operations, the Town of Griffith's plans for continuing industrial/commercial development surrounding the Site, and the unsuitability of the Site's location for potential residential development, the probability is small that the location of the Site would support residential use in the future. The limited population growth expected in the future and Griffith's plans to direct the potential growth to parts of the city

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[1] NIRPC is a multi-purpose, area-wide planning agency representing local governments within Lake, Porter, and LaPorte Counties; at least two-thirds of the Commission must be local officials.

On-Site Areas

- Area 1: On-Site Containment and Still Bottoms/Treatment Lagoon Area
- Area 2: Off-Site Containment Area
- Area 3: Kapica-Pazmey Area
- Area 4A: Wetlands Area
- Area 4B: North Area

Off-Site Areas

- Area 5A: Off-Site - East
- Area 5B: Off-Site - North
- Area 6: Off-Site - West

These areas represent potential points of contact with affected media, based on the current and reasonably expected future exposure settings at and around the ACS Site. Each exposure area is shown in Figure 3-3.

Sections 3.2.1 through 3.2.8 below describe the exposure areas included in the baseline risk assessment, and the potential exposure routes and pathways that are quantitatively evaluated for each area. Hypothetical exposures quantified in the exposure assessment are identified for each exposure area in Table 3-1.

3.2.1 Area 1: On-Site Containment and Still Bottoms/Treatment Lagoon Area

Area 1 is the active manufacturing area of the ACS property, and consists of approximately 15 acres located north of the C & O Railroad. It is surrounded by a fence and includes the On-Site Containment Area and the Still Bottoms/Treatment Lagoon Area. Current and potential future receptors evaluated in the risk assessment for Area 1 are: (1) routine workers; and (2) utility maintenance workers. Trespassing has not been observed in Area 1 under current conditions, but trespassers are assumed to be an additional potential future receptor in this area. Due to physical restraints posed by the shallow ground water table in this area, any future construction would not involve extensive excavation, so a construction worker scenario is not evaluated for Area 1.

Following closure of the disposal areas at the ACS facility (i.e., the On-Site Containment Area and the Still Bottoms/Treatment Lagoon Area) in the 1970s, wastes were covered with at least a foot of clean fill material. In addition, ACS currently maintains a six-inch aggregate cover over most of the manufacturing area. This cover is added to and regraded periodically, as needed. Although current and future on-facility workers may contact the surface material during routine activities in Area 1, the aggregate

and clean fill cover is expected to eliminate any current direct contact with subsurface material. However, for future use, the risk assessment assumes that the aggregate cover may not be maintained and exposure of on-facility workers to subsurface soil could occur (e.g., as a result of excavations that could bring subsurface soils to the surface). Because the future composition of surface soil cannot be predicted with certainty, and may be some combination of what is currently considered surface and subsurface, the risk assessment includes bounding estimates of potential future risks to on-facility workers and trespassers based on: (1) surface soil concentrations only (0 - 2 feet); and (2) subsurface soil concentrations only (2 - 10 feet). OK, as agreed

It has been assumed that both current and future exposure of on-site and off-site receptors could potentially occur via inhalation of vapors emitted from undisturbed soil above the ground water table in Area 1. Vapor emissions from ground water would be significantly less than emissions from soil above the ground water table. Potential off-site inhalation exposures are evaluated for off-site residents nearest to Area 1, and thus are considered conservative, screening-level estimates. OK

Exposures could also hypothetically occur in limited portions of Area 1 if excavation through the aggregate and clean fill is necessary to maintain underground utilities. To conservatively estimate hypothetical exposures, it is assumed that excavations could occur anywhere in Area 1. Due to the shallow depth to ground water in Area 1 (approximately two to eight feet below ground surface) (Warzyn, Inc. 1991a), exposure to both subsurface soil and ground water in an excavation pit may occur during maintenance of utility lines, which are typically located three to seven feet below ground surface. Under current conditions, contact with these media is not expected because all workers performing excavations at the ACS Site are required to wear personal protective equipment as specified in the *ACS Site Safety and Health Plan* (ACS 1997). The soil excavation procedures state that, in addition to clothing that prevents direct contact with soil or ground water, respirators are required in certain circumstances. Thus, inhalation, ingestion, and dermal contact exposures of excavation workers are not expected under current conditions.

As a conservative measure, the baseline risk assessment evaluates potential future exposures by underground-utility maintenance workers, assuming that protective equipment may not be worn during excavation activities. In such cases, the primary potential routes of exposure for excavation workers would be incidental ingestion of soil, dermal contact with soil, dermal contact with ground water entering into an excavation pit, and inhalation of vapor and particulates from soil and exposed ground water. OK

Incidental ingestion of ground water is judged to be relatively insignificant and is not evaluated. OK

Off-site residents could also conceivably be exposed to vapor emissions from soil and ground water during periods of excavation in Area 1, under both current and future conditions. These potential inhalation exposures are evaluated for the off-site residents nearest to Area 1, and are thus considered conservative, screening level estimates. OK

In the past, ACS has used lower aquifer production wells for process water in a closed system. Currently, all production wells are sealed and the ACS facility relies on municipal water only. In addition, ACS has placed a deed restriction on the property to restrict use of ground water for drinking water and irrigation. Thus, exposure to ground water in Area 1 is unlikely to occur. However, in the event that production wells are reinstalled in the future to supplement the municipal water (e.g., for irrigation purposes if Area 1 is landscaped in the future, or for other non-drinking water purposes such as showering), it is assumed that workers could conceivably be exposed to lower aquifer ground water in the future. OK

were not sealed in Oct 97. Is this BRA?

3.2.2 Area 2: Off-Site Containment Area

Area 2 is the Off-Site Containment Area. It consists of approximately 11 acres, and is bounded to the north by the C&O Railroad, to the west by the Griffith Municipal Landfill, to the south by the former Kapica-Pazmey property, and to the east by Colfax Road. Area 2 is owned by ACS and is fenced, but has not been developed. No trespassing has been observed in Area 2 and the fence is checked monthly. Thus, under current land use, the only potential receptors in other areas are who may inhale emissions from Area 2. Although ACS has no plans to sell this property, or to develop it for any purpose, it is conceivable that Area 2 could be developed for industrial use in the future. Should this area be developed for industrial purposes, potentially exposed individuals in Area 2 could hypothetically include routine workers, utility maintenance workers, construction workers, and trespassers.

N. (1) USPA does not recognize fences (2) Prior agreement to assess trespassers

The portion of Area 2 where waste disposal reportedly occurred was covered by more than a foot of clay after the disposal activities ceased. If intact, this clay cap would eliminate direct contact with subsurface materials and reduce the magnitude of vapor emissions. Although the initial clay cap was disturbed in several locations during site characterization and remediation activities, a new clay cap (one-foot deep) has been placed over Area 2.

Under current conditions, it is assumed that exposures of off-site residents could occur via inhalation of vapors from undisturbed subsurface soil in Area 2. Potential

exposures of off-site residents are evaluated by estimating vapor concentrations in air at the off-site residences nearest to Area 2, and thus are considered conservative, screening-level estimates.

If Area 2 were to be developed for industrial purposes, exposures of future routine workers could hypothetically occur via direct contact with surface soils and inhalation of vapor emissions from surface and subsurface soil. The future composition of surface soil cannot be predicted with certainty, and may be some combination of what is currently considered surface and subsurface. Due to ongoing remediation investigations and activities, the current surface concentrations have not been characterized. Therefore, the risk assessment includes a bounding estimate of potential future risks to on-facility workers based on subsurface soil concentrations only.

In addition, future excavation activities to maintain underground utilities could also result in exposures to subsurface soil in Area 2 if personal protective equipment were not required. To quantify potential exposures during underground-utility maintenance, it is assumed that excavations could occur to a depth of less than 10 feet anywhere in Area 2. The primary potential routes of exposure for utility maintenance workers in Area 2 are ingestion of soil, dermal contact with soil, and inhalation of vapor and particulates from exposed soil. Since the water table is somewhat deeper in Area 2 than in Area 1 (generally 10 to 16 feet below ground surface, except at locations immediately adjacent to Area 1), contact with ground water in an excavation pit is not likely to occur and is not evaluated.

If Area 2 were to be developed for industrial purposes, building construction involving excavation of soils may also occur. Exposures of future construction workers could hypothetically occur via incidental ingestion of and dermal contact with soil and inhalation of vapor and particulate emissions from soil. Two construction scenarios are evaluated: (1) the construction of a slab-on-grade building, such as a warehouse, assuming footings excavated to a depth of four feet; and (2) construction of a building requiring excavations to a depth of up to 10 feet.

Off-site residents could also be exposed via inhalation of vapor and particulate emissions from soil during periods of excavation for utility maintenance or construction in Area 2, under future conditions. These potential exposures are evaluated for off-site residences nearest to Area 2, and thus are considered conservative, screening-level estimates.

As mentioned previously, municipal water is readily available to the Site. Thus, future industrial development of Area 2 is likely to include connection to the municipal supply rather than construction of wells, and exposure to on-site ground water is unlikely

to occur. However, in the event that on-site production wells are established in the future to supplement the municipal water (i.e., for non-drinking water purposes), it is assumed that workers could conceivably be exposed to lower aquifer ground water in the future.

3.2.3 Area 3: Kapica-Pazmey Area

The 2-acre Kapica-Pazmey Area is located to the south of the Off-Site Containment Area and is bounded to the west and south by the Griffith Municipal Landfill. As with Area 2, this area is currently fenced and undeveloped, but could conceivably be developed for industrial purposes in the future. Thus, for Area 3, the only potential current receptors are receptors in other areas who may inhale emissions from Area 3.

Under current conditions, potential exposure of trespassers may occur via ingestion and dermal contact with surface soil, inhalation of vapor and particulate emissions from surface soil, and inhalation of vapor emissions from surface and subsurface soil. Potential exposures of off-site residents may also occur via inhalation of vapor and soil particulate from this area. Potential exposures of off-site residents are evaluated at the residences nearest to Area 3, and thus are considered conservative, screening-level estimates.

If Area 3 is developed for industrial purposes, exposures of future routine workers could occur via ingestion and dermal contact with surface soil, and inhalation of vapor and particulate emissions from soil. Because the future composition of surface soil cannot be predicted with certainty, and may be some combination of what is currently considered surface and subsurface, the risk assessment includes bounding estimates of potential future risks to on-facility workers and trespassers based on: (1) surface soil concentrations only (0 - 2 feet); and (2) subsurface soil concentrations only (2 - 10 feet).

In addition, future excavation activities to maintain underground utilities could result in exposures to subsurface soil in Area 3 if protective equipment were not required. To quantify potential exposures during underground-utility maintenance, it is assumed that excavations could occur to a depth of 10 feet anywhere in Area 3. The primary potential routes of exposure for excavation workers are ingestion of soil, dermal contact with soil, and inhalation of vapor and particulates from exposed soil. Due to the depth of the water table in Area 3 (approximately 10 to 16 feet below ground surface), contact with ground water in an excavation pit is not expected to occur and thus is not evaluated.

If Area 3 were to be developed for industrial purposes, building construction involving excavation of soils may also occur. Exposures of future construction workers could hypothetically occur via incidental ingestion of and dermal contact with soil and inhalation of vapor and particulate emissions from soil. Two construction scenarios are evaluated: (1) the construction of a slab-on-grade building, such as a warehouse,

assuming footings excavated to a depth of four feet; and (2) construction of a building requiring excavations to a depth of up to 10 feet.

Off-site residents may also be exposed to vapor and particulate emissions from soil during periods of excavation for utility maintenance or construction in Area 3, under future conditions. These potential inhalation exposures are evaluated for off-site residents nearest to Area 3, and thus are considered conservative, screening-level estimates.

As mentioned previously, municipal water is readily available to the Site. Thus, future industrial development of Area 3 is likely to include connection to the municipal supply rather than construction of wells, and exposure to on-site ground water is unlikely to occur. However, in the event that on-site production wells are established in the future to supplement the municipal water (i.e., for non-drinking water purposes), it is assumed that workers could conceivably be exposed to lower aquifer ground water in the future.

3.2.4 Area 4A: Wetlands Area

Area 4A is located between the Grand Trunk Railroad and the C&O Railroad right-of-ways, west of the fence line of Area 1. This approximately 25-acre area is primarily wetlands and is unlikely to be developed in any way due to Federal Clean Water Act prohibitions on wetland development (42 U.S.C. 1311 and 1344).

Under current and future conditions, potential exposure of trespassers may occur via ingestion and dermal contact with soil/sediment and surface water, and via inhalation of vapor emitted from surface water in Area 4A. Potential exposures of nearby residents and workers may also occur via inhalation of vapor from surface water in this Area. Potential inhalation exposures of off-site residents are evaluated by estimating exposure at the off-site residences nearest to Area 4A, and thus are considered conservative, screening-level estimates.

3.2.5 Area 4B: North Area

Area 4B consists of six acres located north of Area 1 and south of the Grand Trunk Railroad right-of-way, and is heavily vegetated and undeveloped. This area is evaluated separately from Area 4A because it is not classified as wetlands, and thus could potentially be developed for industrial purposes in the future. Under current land use, trespassers are the only potential receptors in Area 4B. Should this area be developed for industrial purposes, future receptors could include routine workers, excavation workers for utility maintenance, and trespassers. Due to physical restraints posed by the shallow ground water table in this area, any future construction would not involve extensive excavation, so a construction worker scenario is not evaluated for Area 4B.

Under current and future conditions, potential exposure of trespassers may occur via ingestion and dermal contact with soil/sediment and surface water, and via inhalation of vapor emitted from ground water in Area 4B. Potential exposures of nearby residents and workers may also occur via inhalation of vapor from this area. Potential exposures of off-site residents are evaluated by estimating exposure at the off-site residences nearest to Area 4B, and thus are considered conservative, screening-level estimates.

Should this area be developed for industrial purposes in the future, potential exposure of workers may occur via ingestion and dermal contact with soil/sediment and surface water, and via inhalation of vapor emitted from ground water in Area 4B. No constituents have been detected in subsurface soil from this Area, so the evaluation of potential future exposures is conservatively based on a bounding estimate of surface soil concentrations only.

As a conservative measure, the baseline risk assessment evaluates potential future exposures by underground-utility maintenance workers, assuming that protective equipment may not be worn during excavation activities. In such cases, the primary potential routes of exposure for excavation workers would be incidental ingestion of soil, dermal contact with soil, dermal contact with ground water entering into an excavation pit, and inhalation of vapor and particulates from soil and exposed ground water. Ingestion of ground water is judged to be relatively insignificant and is not evaluated.

As mentioned previously, municipal water is readily available to the Site. Thus, future industrial development of Area 4B is likely to include connection to the municipal supply rather than construction of wells, and exposure to on-site ground water is unlikely to occur. However, in the event that on-site production wells are established in the future to supplement the municipal water (i.e., for non-drinking water purposes), it is assumed that workers could conceivably be exposed to lower aquifer ground water in the future.

3.2.6 Area 5A: Off-Site - East

Area 5A consists of off-site properties to the east and southeast of the Site that are zoned for industrial use only, but include existing residential development. Current and future potential receptors in Area 5A include both off-site residents and off-site workers. As off-site worker exposures are expected to be lower than potential residential exposures in Area 5A, only residential exposures are quantified in the risk assessment. Risks are calculated for both child and adult residents.

As discussed in Sections 3.2.1 through 3.2.5, residents could be exposed via inhalation of vapor and particulates from on-site areas, both during routine operations and during excavation in those areas. Site-related constituents may also migrate to off-site

soils via deposition of airborne particulates or via ground water discharge to the surface. Residences near the Site are not located at ground water discharge points and deposition of particulate emissions from the Site is not expected to be significant. However, as a conservative measure, the baseline risk assessment evaluates potential residential exposure to off-site soil based on the results of supplemental off-site samples collected in September 1997.

Two ground water aquifers are present in the vicinity of the Site, with a continuous clay layer separating the two systems (Warzyn, Inc. 1991a). A survey of homes adjacent to the Site performed during the RI indicated that private wells exist in the lower aquifer and are used for drinking water (Warzyn, Inc. 1991a, 1991b). Based on well records and constituent concentrations measured in private well water, there is no evidence that any existing private wells in Areas 5A or 5B are screened above the clay layer. Because the clay layer in the vicinity of the Site is too shallow for wells to be installed in the upper aquifer (i.e., averages less than 20 feet below ground surface), any new wells would need to extend through the clay into the lower aquifer. Therefore, the risk assessment uses concentrations in the lower aquifer to estimate future concentrations in residential wells. However, as a bounding scenario, the risk assessment also evaluates residential use of upper aquifer water in Section 5.3 (Uncertainty Analysis). It should be noted that most residents of Griffith rely on the municipal water supply system for drinking water (Warzyn, Inc. 1991b). Conditions at the Site do not and cannot affect the quality of the municipal water supply, as this water is drawn from Lake Michigan (NIPSC 1992).

Is this conservative?

Given available information regarding ground water use adjacent to the Site, off-site residential exposures to constituents in ground water in Area 5A can potentially occur through ingestion, dermal contact and inhalation during potable use. Potential exposures of off-site adult residents to constituents in ground water during outdoor use are via incidental ingestion and dermal contact during gardening, lawn care, and other nonpotable uses. Off-site child residents could be exposed to constituents in ground water used to fill an outdoor swimming/wading pool.

3.2.7 Area 5B: Off-Site North

Area 5B consists of off-site properties to the north of the Site that are zoned for industrial use. The area immediately north of the Site in Area 5B is primarily vacant, and classified as wetlands. There are no residences in Area 5B within approximately half a mile of the Site, and the wetlands portion of Area 5B is unlikely to be developed in any way due to Federal Clean Water Act prohibitions on wetland development (42 U.S.C. 1311 and 1344). Future potential receptors in the non-wetlands portions of Area 5B are off-site

workers. Constituents have been detected only in upper aquifer water in a vacant portion of this area, so exposures are evaluated only for those future workers who may potentially contact upper aquifer water. The clay layer averages 13 feet in depth below ground surface in Area 5B, which precludes installation of a well in the upper aquifer. Thus, workers performing excavation for utility maintenance are the only receptors likely to contact upper aquifer water.

To conservatively estimate hypothetical exposures, it is assumed that excavations could occur anywhere in Area 5B. Due to the shallow depth to ground water in Area 5B, exposure to ground water in an excavation pit may occur during maintenance of utility lines, which are typically located three to seven feet below ground surface.

As a conservative measure, the baseline risk assessment evaluates potential future exposures by underground-utility maintenance workers, assuming that protective equipment may not be worn during excavation activities. In such cases, the primary potential routes of exposure for excavation workers would be dermal contact with ground water entering into an excavation pit and inhalation of vapor from exposed ground water.

3.2.8 Area 6: Off-Site - West

Area 6 consists of off-site properties to the west and southwest of the Site in an area that is zoned for residential use. Current and future potential receptors in Area 6 include both off-site residents and off-site workers. As off-site worker exposures are expected to be lower than potential residential exposures in Area 6, only residential exposures are quantified in the risk assessment. Risks are calculated for both child and adult residents.

As discussed in Sections 3.2.1 through 3.2.5, residents could be exposed via inhalation of vapor and particulates from on-site areas, both during routine operations and during excavation in those areas. Surface water from Area 4A (i.e., the wetlands area) discharges to a low-lying area between the Chesapeake and Ohio railroad right-of-way and the Griffith Municipal landfill. Water intermittently present in this area flows to the west, towards Area 6. Therefore, in addition to inhalation exposures of vapor and particulate from on-site areas, potential residential exposures to sediment are evaluated for Area 6. Exposures to ground water are not evaluated, however, because Area 6 is not located downgradient of the Site.

3.3 Exposure Concentrations

Constituent concentrations have been measured in soil, ground water, surface water, and sediment at various locations at and around the ACS Site. These measured concentrations are used in estimating potential exposure concentrations, i.e., chemical concentrations at the

hypothetical points of contact discussed in Section 3.2. Approaches used to estimate exposure concentrations in the various environmental media (i.e., soil, ground water, surface water, sediment, and ambient air) are presented in the following sections.

3.3.1 Exposure Concentrations in Soil

USEPA guidance (USEPA 1989, 1992d) recommends using a conservative estimate of the arithmetic mean of measured concentrations for the exposure point concentration, when evaluating long-term exposures. The 95% upper confidence limit (UCL) on the mean of measured concentrations is usually used in calculating Lifetime Average Daily Doses (LADDs) and Average Daily Doses (ADDs), although the maximum measured concentration is used when the 95% UCL exceeds the maximum detected concentration (USEPA 1989). In calculating the 95% UCL, assumptions about the distribution of the concentration data are necessary. In the baseline risk assessment, 95% UCL concentrations are calculated using the USEPA (1992d) default equation for normally distributed data, unless the distribution of a constituent is clearly lognormal based on the Shapiro-Wilk test (Gilbert 1987). In such cases, the USEPA (1992d) equation for lognormally distributed data is used.

actually! • don't mix hot spot w hon-hs ↑ sd, so ↑ 95% UCL

In evaluating exposures for a given area, all soil data from the relevant depth intervals from the area are used in calculating the 95% UCL concentration estimates. This approach is conservative because soil sampling and analysis at the Site have been biased toward locations and depths where concentrations are believed to be highest. Random sampling, which would be appropriate for more accurately quantifying exposures, would be expected to result in lower 95% UCL concentration estimates. Furthermore, there is no indication that long-term exposures to trespassers, routine workers, or excavation workers would be limited to any specific location within an area.

because layer of ground is ns

For evaluating potential surface contact exposures, the lower of the 95% UCL and maximum detected concentration of a constituent is obtained using soil samples collected within two feet of the ground surface for current scenarios and for the first bounding estimate for future scenarios, and from two to 10 feet for the second bounding estimate for future scenarios. For evaluating potential exposures during utility maintenance excavation activities, the lower of the 95% UCL and maximum detected concentration of a constituent is obtained using soil samples collected from a depth of 0 to 10 feet for the current and future scenarios, except in Area 4B. No wastes were disposed of in Area 4B and no constituents were detected in the subsurface soil sample from this Area (SB-096). Therefore, in Area 4B, the lower of the 95% UCL and maximum detected concentrations

for all samples collected within a depth of two feet were used to evaluate potential future exposures during utility maintenance.

Due to the heterogeneity of sample results in Areas 2 and 3, at the request of EPA, an additional bounding estimate of potential exposures to soil is evaluated using the maximum concentration of each constituent detected in these areas. Such a bounding estimate represents "worst-case" evaluation using currently available data, since the maximum concentrations for the different constituents do not all occur at the same location, and the 95th UCL concentration is significantly lower than the maximum detected concentration for many constituents. The results of this evaluation are presented in Section 5.3 (Uncertainty Analysis).

3.3.2 Exposure Concentrations in Ground Water

As discussed in Section 3.2, workers are not currently exposed to on-site ground water. However, in the future, on-site worker exposure to constituents in lower aquifer ground water could occur if on-site ground water wells are established to supplement the available municipal supply. Potential exposure concentrations for Areas 1, 2, 3, and 4B are conservatively estimated using the maximum detected concentration for each constituent in lower aquifer water, based on all production well and on-site lower aquifer monitoring well data.

In addition, future worker exposure to constituents in upper aquifer ground water may occur through dermal contact with ground water during utility maintenance excavation activities in Areas 1, 4B, and 5B, where the depth to ground water is shallowest. In other areas, the ground water is considerably deeper and direct exposures would not be expected. The exposure concentrations in Areas 1 and 4B are estimated using the maximum detected concentrations for each constituent in ground water, based on data from the upper aquifer monitoring wells located in or immediately adjacent to each Area. Consistent with USEPA Region 5 policy, hypothetical future worker exposures to constituents in off-site upper aquifer water (i.e., Area 5B) are estimated using data from wells at the center of the off-site plume. Of the four upper aquifer wells in Area 5B, only Well MW-48 is in the center of the plume.

As discussed in Section 3.2.6, off-site residential exposure to constituents in ground water may occur in Area 5A through ingestion, dermal contact, and inhalation of vapors during household use and through incidental ingestion and dermal contact during gardening, swimming and other outdoor activities. Potential current exposures to constituents in ground water are estimated using data from existing private wells. The existing private well with constituent concentrations corresponding to the highest overall

potential risk is conservatively used to evaluate current off-site residential exposures. Hypothetical future exposures to constituents in lower aquifer water are estimated using the maximum concentration for each constituent detected in any off-site well in Area 5A. This approach is considered conservative because the maximum concentrations for all constituents do not all occur in the same well. As discussed in Section 3.2, the shallow depth of the clay layer in the vicinity of the Site precludes installation of wells into the upper aquifer. However, as a bounding estimate, future residential exposures to upper aquifer water are evaluated and presented in Section 5.3 (Uncertainty Analysis). Consistent with USEPA Region 5 policy, hypothetical future exposures to constituents in upper aquifer water are estimated using the lower of the 95% UCL and maximum detected concentration data from wells at the center of the off-site plume (i.e., Wells MW-45 and MW-06 in Area 5A).

3.3.3 Exposure Concentrations in Sediment and Surface Water

Exposures of trespassers to sediments and surface water in Areas 4A and 4B, and of residents to sediments in Area 6, are evaluated under both current and future scenarios. Exposures of trespassers to these media in Areas 1 and 2 are evaluated as future scenarios. Exposures of workers to sediments and surface water in Area 1 are evaluated under both current and future scenarios, while exposures to these media in Areas 2 and 4B are evaluated under future scenarios. In each of these areas exposure concentrations are based on the lower of the 95% UCL and the maximum detected concentration.

3.3.4 Exposure Concentrations in Air

Exposure concentrations in ambient air resulting from potential vapor and particulate emissions from soil, and resulting from potential vapor emissions from ground water and surface water, are estimated using mathematical models in combination with the exposure concentrations in soil, ground water, and surface water. The vapor and particulate emission models for unsaturated soil, the vapor emission model for exposed and covered ground water, and the air dispersion model for estimating on-source and off-source air concentrations are all recommended by USEPA (USEPA 1992c, 1996a). Details of these models are presented in Appendix B; major features and assumptions in the emission and dispersion modeling are discussed below.

The model used to estimate vapor emissions from unsaturated soil is described by Jury et al. (1990) and by USEPA in its *Soil Screening Guidance* (USEPA 1996a). The model estimates the average vapor flux from the soil surface over a defined period of exposure under unsteady-state conditions, with the assumption that constituents in soil

extend to a finite depth (i.e., to the water table) and that no clean cover is present. Default values recommended by USEPA (1996a) are used for all soil properties, unless site-specific data are available. Chemical-specific transport properties (i.e., K_{oc}, Henry's law constant, diffusivity in air, and diffusivity in water) compiled by USEPA (1996a) are also used in the calculation of vapor flux.

The model used for estimating potential vapor emissions from exposed ground water and surface water is recommended by USEPA (1992e). It estimates the steady-state vapor flux of constituents using an overall mass transfer coefficient, which accounts for mass transfer of a chemical through water-air interfacial films. The concentration of a constituent in the exposed ground water is assumed to remain constant at the estimated exposure concentration. Henry's law constants compiled by USEPA (1996a) are used in the calculation of the overall mass transfer coefficients.

The model for estimating vapor emissions from ground water below a layer of cover soil is a one-dimensional steady-state diffusion model using Fick's Law. The model estimates the steady-state vapor flux of constituents from the water table, through the region of capillary rise, and through pore space in soil above the capillary fringe. The concentration of a constituent in the ground water is assumed to remain constant at the estimated exposure concentration. Henry's law constants and diffusion coefficients compiled by USEPA (1996a) are used in the calculations.

The particulate emission model (USEPA 1992e) for undisturbed soils is based on the suspension of surface soil by wind erosion. It estimates the emission of respirable soil particles, defined as being 10 μm in diameter or smaller (i.e., PM_{10}). The key parameters in the model that influence particulate emission are the threshold friction velocity for the soil and the mean annual wind speed. For the threshold friction velocity, which is correlated to the mode of the soil aggregate size distribution, USEPA's default mode aggregate size of 0.5 mm is used. A mean annual wind speed of 10.2 miles per hour (or 4.56 m/s) from the National Oceanic and Atmospheric Administration (NOAA 1993) for South Bend, Indiana is used. USEPA (1996a) default values are used for other model parameters, unless site-specific data are available as noted in Appendix B.

Particulate emissions resulting from potential on-facility excavation in Areas 1 and 4B are expected to be insignificant, since the water table in these areas is very shallow, so that little dry soil would be exposed and become susceptible to airborne transport. Particulate emissions during hypothetical future excavations and construction in Areas 2 and 3 are evaluated using empirical data compiled by USEPA (1995b) which pertain to dust emission from "heavy construction operations."

Under non-excavation conditions, on-facility and off-site air concentrations are estimated using USEPA's Industrial Source Complex (ISCST3) model (USEPA 1995a). ISCST3 is an advanced steady-state Gaussian plume model that calculates chemical concentrations at specific downwind locations as a function of wind speed, atmospheric stability, temperature gradient, mixing height and downwind distance. ISCST3 utilizes local hourly meteorological data records to define the conditions for dispersion. Data from the closest stations were used: Michiana Airport in South Bend, Indiana for surface meteorological conditions, and Bishop Airport in Flint, Michigan for upper air data. The on-facility workers in each area are assumed to move freely throughout the area, and the applicable area-wide dispersion factor is estimated from the average of the dispersion factors developed for each receptor location within the area. Off-facility receptors are assumed to be located near the intersection of Colfax Avenue and Reder Road for Area 5A, along the Grand Trunk Railroad right-of-way for Area 5B, and along the Chicago &Erie Railroad right-of-way for Area 6.

Other major assumptions used in the modeling are:

- The emission source is represented as a non-buoyant, zero-momentum area source;
- Suspended particles from the source remain suspended before reaching the receptor (i.e., there is negligible deposition and resuspension); and
- The physical setting of the facility and its immediate surroundings can be modeled as a rural environment with no significant obstructions (e.g., tall buildings, abrupt topography).

For excavation activities, on-site concentrations in air are estimated using a simple "box" model, while off-site concentrations are estimated using USEPA's ISCST3 model. The "box" model, which allows for screening level calculations near a ground level emission source, is discussed in detail in Appendix B.

Results of air emission and dispersion modeling were compared to ambient air monitoring conducted at the Site in July 1997 (Focus 1997). Daily eight-hour ambient air samples were collected approximately 100 feet upwind and 100 feet downwind of the material handling activities in Area 2 during on-site excavation, trenching, and screening. Modeled emissions were estimated using: (1) maximum soil concentrations in Area 2; and (2) the lower of the maximum and 95% UCL soil concentrations in Area 2. These emissions were combined with maximum eight-hour average dispersion estimates for receptors located approximately 100 feet from a source, based on ISCST3. Modeled

ambient air concentrations based on maximum Area 2 soil concentrations ranged from five-fold to 200-fold higher than the maximum measured ambient air concentrations. Modeled ambient air concentrations based on the lower of the maximum or 95% UCL soil concentrations more closely approximated the measured concentrations (i.e., modeled concentrations ranged from 0.9 to 30 times the measured concentrations). Thus, ambient air concentrations estimated in the risk assessment using the EPA emission models and the ISCST3 dispersion model are likely to be conservative estimates of potential concentrations. The comparison of air modeling results to the Focus (1997) monitoring results is presented in Appendix B.

Indoor air concentrations from indoor use of ground water are estimated by applying a volatilization factor of 0.5 L/m^3 to the estimated concentrations of volatile organic compounds in ground water. The volatilization factor is based on experimental data on the volatilization of radon from household uses of water and is recommended by USEPA (1991c). The volatilization factor is also consistent with the results of a three-compartment, mass balance model (McKone 1987) simulating the transfer of VOCs from household uses of tap water and the distribution of the VOCs inside a home. The volatilization factor of 0.5 L/m^3 was also used to estimate air concentrations in on-site showers used by workers.

3.4 Estimation of Media Intake

Potential exposures via the pathways identified in Section 3.2 are calculated by multiplying the estimated constituent concentrations in environmental media (identified in Section 3.3) by the estimated intake of the environmental media by potentially exposed populations. The product of these two components is called the potential dose (USEPA 1992c). The potential dose is combined with toxicity values (presented in Section 4) to estimate theoretical carcinogenic risk and the potential for noncancer health effects (presented in Section 5). Since inhalation toxicity values are typically reported in units of concentration rather than potential dose, the air concentration over the period of exposure is estimated (rather than potential dose), and combined with the inhalation toxicity values to estimate potential inhalation risks.

Potential dose is calculated differently when evaluating theoretical carcinogenic risk than when evaluating the potential for noncarcinogenic effects. For evaluating carcinogenic risk, intake is averaged over a lifetime (USEPA 1989) and the potential dose is called the lifetime average daily dose (LADD). For evaluating noncarcinogenic effects, intake is averaged over the period of exposure and the potential dose is called the average daily dose (ADD). The LADD and ADD of a constituent for a specific route of exposure (e.g., soil ingestion) are generally calculated using the following equations:

$$LADD_{route} = Concentration_{medium} \cdot Intake_{lifetime,\ route}$$

Equation (1)

The general equation for estimating intake is as follows:

$$Intake = \frac{CR \cdot EF \cdot ED}{BW \cdot AT}$$

Equation (2)

where:

Intake = Unit dose, $kg_{soil}/kg_{body\ weight}$-day

CR = contact rate, which is either:

- soil ingestion rate (IR), mg/day
- drinking water rate (DR), L/day;
- dermal contact rate for soil exposures, mg/day, which is the product of the exposed skin surface area (SA), soil-to-skin adherence factor (AD), and absorption factor (ABS);
- dermal contact rate for water exposures, cm^3/day, which is the product of the skin surface area (SA), skin permeability coefficient (K_p), and exposure time.

EF = exposure frequency, days/year, which includes an exposure time (ET) term for the inhalation pathway;

ED = exposure duration, years;

BW = body weight, kg; and

AT = averaging time (AT), days, which is a lifetime of 70 years for carcinogens (AT_{carc}), and which is equal to the exposure duration for noncarcinogens ($AT_{noncarc}$).

It should be noted that the general equation for inhalation intake does not include body weight (BW) or contact rate (CR), because the inhalation toxicity factors are already adjusted for these terms. The specific equations used to calculate media intakes for each route of exposure are presented in Appendix C.

Estimates of media intake are developed for the following hypothetical populations (receptors) and exposure scenarios, as identified in Section 3.2:

3.4.6 Off-Site Worker (Area 5B) (Utility Maintenance Excavation)

- inhalation of vapors in ambient air
- dermal contact with ground water while excavating

According to USEPA (1995c) guidance, variability in the factors affecting exposure within a potentially exposed population should be considered in estimating potential current and future exposures. As one means of characterizing the distribution of possible exposures in a population, USEPA (1995c) recommends that both high-end and central tendency estimates of exposure be developed. Central tendency (i.e., typical) estimates represent the average, or most likely, exposures in the population. High-end (often referred to as reasonable maximum) estimates represent the exposures "above the 90th percentile of the population distribution, but not higher than the individual in the population who has the highest exposure." (USEPA 1995c). The exposure factors for estimating central tendency and high-end intakes for each of the potential receptor groups are presented in the following sections and summarized in Tables 3-5 and 3-6, respectively. The factors discussed below apply to both current and future land use scenarios, unless otherwise noted.

3.4.1 Routine Worker

The exposure factors used in the baseline risk assessment for workers engaged in routine industrial activities at the Site are discussed below.

3.4.1.1 Contact Rates

- **Incidental Ingestion Rate of Surface Soil**
  The current and future routine worker is assumed to ingest 100 mg of soil per day under the high-end scenario, and 50 mg of soil per day under the typical scenario. Consistent with USEPA guidance (1991a, 1997), these ingestion rates are based on the adult soil ingestion rates presented in Calabrese et al. (1990).

- **Dermal Contact with Surface Soil: Exposed Skin Surface Area, Soil-Skin Adherence Factor, and Absorption Factor**
  Dermal contact is estimated from the product of exposed skin surface area, soil-skin adherence factor, and chemical-specific absorption factor. The

product of the exposed skin surface area and the soil-skin adherence factor is known as the dermal soil loading.

Based on USEPA (1992f), soil adherence is assumed to be 1.0 mg/cm^2-event for the high-end scenario and 0.2 mg/cm^2-event for the typical scenario. This guidance recommends assuming that a skin area corresponding to 25% of the total body skin area is exposed to soil. Accordingly, surface area is assumed to be 5,800 cm^2 for the high-end scenario and 5,000 cm^2 for the typical scenario.

USEPA's (1992f) chemical-specific absorption factors of 1% for cadmium and 6% for PCBs are conservatively used in this assessment. The generic absorption factors recommended in USEPA (1995d) guidance of 1% for organics and 0.1% for inorganics are used for all other chemicals. The absorption factor for organics is supported by available data for soil contact times between eight and 16 hours (0.05% and 2%, respectively, for an herbicide in soil as reported by Wester et al. (1996)).

- **Incidental Ingestion Rate of Surface Water**

  Current and future workers in Area 1 could contact surface water in the fire pond, and future workers could contact surface water that is intermittently present in ditches in Area 2 and Area 4B. Under the high-end and typical scenarios, the routine worker is assumed to ingest 0.05 liters of surface water per contact event. This ingestion rate is conservatively based on USEPA's (1989) ingestion rate for swimming of 0.05 L/hour, along with the assumption that the worker would be in contact with the water for up to an hour per day. The ingestion rate is very conservative, considering that the worker is not swimming in the water, and thus the potential for incidental ingestion is much lower.

- **Incidental Ingestion Rate of Ground Water Used Outdoors**

  There is currently no on-site use of ground water at the Site. For future worker scenarios, it is assumed that an on-site well could be installed in the lower aquifer. The future routine worker could hypothetically contact lower aquifer ground water while engaging in outdoor work that involves the use of ground water from an on-site well, such as hosing off asphalt surfaces or watering a lawn. In order to quantify hypothetical exposures under this pathway, it is assumed that the routine worker is watering the lawn. Under

the high-end scenario, the routine worker is assumed to ingest 0.1 liters of lower aquifer ground water per day while watering a lawn. This ingestion rate is conservatively based on USEPA's (1989) ingestion rate for swimming of 0.05 L/hour, along with the assumption that the worker would water the lawn for up to two hours per day, consistent with the upper end of USEPA's (1996b) time estimate of one to two hours per day for gardening. The 0.1 L/day ingestion rate is very conservative, considering that the worker is not swimming in the water.

Under the typical scenario, the routine worker is assumed to ingest 0.05 liters of lower aquifer ground water per day while engaging in outdoor work that would involve ground water. This ingestion rate is also based on USEPA's (1989) ingestion rate for swimming of 0.05 L/hour, but with the expectation that the worker would typically water the lawn for approximately one hour per day, consistent with USEPA's (1996b) time estimate of one to two hours per day for gardening. For the reasons discussed above, the 0.05 L/hour ingestion rate is considered conservative for the typical scenario.

- **Dermal Contact with Ground Water Used Outdoors and with Surface Water: Exposed Skin Surface Area, Dermal Permeability Coefficient, and Exposure Time**

  Dermal contact with constituents in water is estimated from the product of the exposed skin surface area and the chemical-specific dermal permeability coefficient (K_p). Consistent with exposed skin surface areas for soil exposure, the future routine worker is assumed to have 5,800 cm^2 of exposed skin for the high-end scenario and 5,000 cm^2 of exposed skin for the typical scenario of exposure to either surface water or ground water used outdoors. It is conservatively assumed that the entire exposed skin surface area would come into direct contact with water.

  Chemical-specific permeability coefficients (K_p) were estimated using Equation 5.8 from USEPA (1992f), while a default K_p value of 10^{-3} cm/hour was assigned to those inorganic constituents that are not listed in USEPA (1992f). An upper limit of one cm/hour for K_p was established, based on USEPA (1992f) which states that the limiting permeability coefficient in the viable epidermis ranges from 0.1 to 1.0 cm/hr and that "... it seems reasonable to expect that experimentally measured permeability coefficients for chemical penetration across the skin from aqueous media (assuming that

the chemical does not alter the barrier properties) are limited to one cm/hour" (p. 4-21).

As described above for incidental ingestion of ground water, the future routine worker is assumed to be engaged in work that would involve use of ground water for two hours per day under the high-end scenario, and one hour per day under the typical scenario. As described above for incidental ingestion of surface water, the future routine worker is assumed to be in contact with surface water for one hour per day under both the high end and typical scenarios.

- **Dermal Contact with Ground Water Used Indoors: Exposed Skin Surface Area, Dermal Permeability Coefficient, and Exposure Time**
  If an on-site well is installed in the future, it is assumed that workers could use the water for showering, thereby exposing the total body surface area to ground water. The high-end surface area is assumed to be 23,000 cm^2 corresponding to the 95th percentile of measured total body surface areas for men (USEPA 1992f, 1997c). The central tendency surface area is assumed to be 20,000 cm^2, based on the mean total body surface areas for men (USEPA 1992f, 1997c).

3.4.1.2 Exposure Frequency

- **Frequency of Incidental Ingestion of Soil and Indoor Dust**
  Under high-end scenario, the routine worker is expected to have an exposure frequency of 250 days/year, based on a 5-day work week for 50 weeks per year, consistent with USEPA (1991a) guidance. Under the typical scenario, the routine worker is expected to have an exposure frequency of 219 days/ year, based on an average for all full and part-time workers (USEPA 1993a). These frequencies account for both outdoor ingestion of surface soil and indoor ingestion of dust.

- **Frequency of Dermal Contact with Soil and Indoor Dust**
  For routine workers, the frequency of dermal contact is assumed to be the same as the frequency of incidental ingestion. Thus, the exposure frequency is 250 days per year for the high-end scenario and 219 days/year for the

typical scenario, accounting for both outdoor contact with surface soil and indoor contact with dust.

- **Frequency of Inhalation of Vapor and Particulates in Ambient Air, including Exposure Time (ET) Term**
  Under the high-end scenario, the routine worker is expected to have an inhalation exposure frequency of 250 days/year, based on 5-day work week for 50 weeks per year, consistent with USEPA (1991a) guidance. As discussed above, under the typical scenario, workers are expected to have an inhalation exposure frequency of 219 days per year. Because of the high activity level expected for a worker, and therefore elevated inhalation rate, the exposure frequency is not adjusted by an exposure time (ET) term to account for the hours per day a receptor is at the site. Thus, the inhalation rate for the worker would correspond to 2.5 m^3/hr. = 20 m^3/day for 8 hr day.

- **Frequency of Incidental Ingestion of Surface Water**
  Current and future workers in Area 1 could contact surface water in the fire pond, and future workers could contact surface water that is intermittently present in ditches in Area 2 and Area 4B. Under the high-end scenario, the routine worker is assumed to incidentally ingest surface water approximately once a week during the summer months, or 12 days per year. Under the typical scenario, the routine worker is assumed to incidentally ingest surface water once a month during the summer months, or three days per year.

- **Frequency of Dermal Contact with Surface Water**
  Frequency of dermal contact with surface water is expected to be the same as the frequency of incidental ingestion of surface water. Thus, the exposure frequency for a worker is 12 days per year for the high-end scenario and three days per year for the typical scenario.

- **Frequency of Incidental Ingestion of Ground Water Used Outdoors**
  Under the hypothetical future ground water use scenario, the frequency with which a routine worker may incidentally ingest lower aquifer ground water during outdoor activities, such as watering a lawn, is assumed to be 40 days per year for both the high-end and typical scenarios, based on USEPA (1996b) guidance on gardening frequency. Use of gardening frequency to

may not be a reasonable hrt for other areas

estimate hypothetical on-site water use frequency is conservative because it assumes that all gardening events involve water use.

- **Frequency of Dermal Contact with Ground Water Used Outdoors**
  Under the hypothetical future ground water use scenario, the frequency with which a routine worker may contact lower aquifer ground water during outdoor activities is expected to be 40 days per year for both the high-end and typical scenarios, based on USEPA (1996b) guidance on gardening frequency. Use of gardening frequency to estimate hypothetical on-site water use frequency is conservative because it assumes that all gardening events involve water use.

- **Frequency of Dermal Contact with Ground Water Used Indoors**
  If an on-site well is installed in the future, it is assumed that workers could use the water for showering during each work day. Thus, the exposure frequency for dermal contact is 250 days per year for the high-end scenario and 219 days per year for the typical scenario.

- **Frequency of Inhalation of Vapors from Ground Water During Indoor Use**
  If an on-site well is installed in the future, it is assumed that workers could use the water for showering during each work day. Thus, the exposure frequency for inhalation exposures is 250 days per year for the high-end scenario and 219 days per year for the typical scenario.

3.4.1.3 Exposure Duration

For the high-end scenario, the routine worker is expected to work at the facility for 20 years, based on the 99th percentile for worker tenure at one location (USEPA 1993a). For the typical scenario, the routine worker is expected to work at the facility for five years, based on the recommended central tendency value for worker tenure at one location (USEPA 1993a).

3.4.1.4 Body Weight

For both the high-end and typical scenarios, the body weight of the routine worker is assumed to be 70 kg, based on the mean adult body weight presented in USEPA (1990a, 1993a).

3.4.1.5 Averaging Times

For both the high-end and typical scenarios, the averaging time for carcinogenic risks is equal to a lifetime of 70 years in days (i.e. 25,550 days). For both the high-end and typical scenarios, the averaging time for noncarcinogenic effects is equal to the exposure duration in days. For year-round exposures, such as soil ingestion, the averaging time is equal to the number of days in a year multiplied by the number of years of exposure. For seasonal exposures, such as dermal contact with surface water, the averaging time is equal to the number of days in the season multiplied by the number of years of exposure. For example, the high-end scenario averaging time for a worker contacting surface water is calculated: (3 months/12 months) x (365 days/yr) x (20 years), which equals 1,825 days.

3.4.2 Utility Maintenance Worker

The exposure factors discussed below correspond to a hypothetical future scenario in which workers engage in excavation activities in order to maintain underground utility lines without wearing the proper personal protective equipment currently required by ACS health and safety protocols.

3.4.2.1 Contact Rates

- **Incidental Ingestion Rate of Surface and Subsurface Soil**
  For the high-end scenario, the excavation worker is assumed to ingest 480 mg of soil per day, based on USEPA (1991a, 1993a). Under the typical scenario, the excavation worker is assumed to ingest 100 mg of soil per day, based on USEPA (1993a).

- **Dermal Contact with Surface and Subsurface Soil: Exposed Skin Surface Area, Soil-Skin Adherence Factor, and Absorption Factor**
  Dermal contact with soil is estimated from the product of the exposed skin surface area, the soil-skin adherence factor, and the chemical-specific absorption factor. The product of the exposed skin surface area and the soil-skin adherence factor is known as the dermal soil loading.

  Based on USEPA (1992f), soil adherence is assumed to be 1.0 mg/cm^2-event for the high-end scenario and 0.2 mg/cm^2-event for the typical scenario. This guidance recommends assuming that a skin area corresponding to 25% of the total body skin area is exposed to soil.

Accordingly, surface area is assumed to be 5,800 cm^2 for the high-end scenario and 5,000 cm^2 for the typical scenario.

The estimates for absorption factors for the excavation workers are assumed to be the same as those for the routine worker (as described in Section 3.4.1.1). That is, the assumed absorption factors for both high-end and typical scenarios are 1% for all organics, except for PCBs which are 6%; and 0.1% for all inorganics, except for cadmium, which is 1% (USEPA 1992f, 1995d).

- **Dermal Contact with Ground Water While Excavating: Exposed Skin Surface Area, Dermal Permeability Coefficient, and Exposure Time**
The dermal contact rate for water exposures is obtained from the product of the exposed skin surface area and the chemical-specific permeability coefficient. The estimates for exposed skin surface area for the excavation workers are assumed to be the same as those for the routine worker (as described in Section 3.4.1.1). That is, the exposed skin surface area is 5,800 cm^2 for high-end exposures, and 5,000 cm^2 for typical exposures. The entire exposed skin area is conservatively assumed to come in direct contact with ground water during excavation.

  K_p values were estimated using Equation 5.8 from USEPA (1992f), and a default K_p value of 10^{-3} cm/hour was assigned to those inorganic constituents that are not listed in USEPA (1992f). An upper limit of one cm/hour for K_p was established based on USEPA (1992f).

  For the high-end and typical scenarios, the excavation worker is conservatively assumed to be engaged in excavation work that would bring him in contact with ground water for eight hours per day, in Areas 1 and 4B only.

3.4.2.2 Exposure Frequency

- **Frequency of Incidental Ingestion of Surface and Subsurface Soil**
Excavation activities for utility maintenance are assumed to be conducted for two work-weeks per year (i.e, 10 days/year) for the high-end scenario and one work-week (i.e., 5 days/year) for the typical scenario, based on the time estimated to maintain underground utility lines.

- **Frequency of Dermal Contact with Surface and Subsurface Soil**
  The frequency of dermal contact with soil during utility maintenance is assumed to be the same as the frequency of incidental ingestion. Thus, the exposure frequency is assumed to be 10 days per year for the high-end scenario and five days/year for the typical scenario.

- **Frequency of Inhalation of Vapor and Particulates in Ambient Air**
  As noted above, the utility maintenance worker is assumed to be engaged in activities to maintain underground utility lines for 10 days per year under the high-end scenario and five days per year under the typical scenario. Because of the high activity level expected for a utility maintenance worker, and therefore elevated inhalation rate, the exposure frequency is not adjusted by an exposure time (ET) term to account for the hours per day a receptor is at the site. Thus, the inhalation rate for the utility maintenance worker would correspond to 2.5 m^3/hr.

- **Frequency of Dermal Contact with Ground Water While Excavating**
  The frequency with which a worker may have dermal contact with water while excavating is assumed to be equal to the frequency an excavation worker may incidentally ingest soil. Thus, the exposure frequency is assumed to be 10 days per year for the high-end scenario and five days/year for the typical scenario.

3.4.2.3 Exposure Duration

For the high-end scenario, the worker is expected to work at the facility for 20 years, based on the 99th percentile for worker tenure at one location (USEPA 1993a). For the typical scenario, the worker is expected to work at the facility for five years, based on the USEPA guidance (USEPA 1993a) central tendency value for worker tenure at one location.

3.4.2.4 Body Weight

For both the high-end and typical scenarios, the body weight of the excavation worker is assumed to be 70 kg, based on the mean adult body weight presented in USEPA (1990a, 1993a).

3.4.2.5 Averaging Times

For both the high-end and typical scenarios, the averaging time for carcinogenic risks is equal to a lifetime of 70 years in days (i.e., 25,550 days). For both the high-end and typical scenarios, the averaging time for noncarcinogenic effects is equal to the exposure duration in days, calculated as the product of the exposure frequency and the exposure duration.

3.4.3 Building Construction Worker

The exposure factors discussed below correspond to a hypothetical future scenario in which workers engage in building construction activities in Areas 2 and 3 without wearing the proper personal protective equipment currently required by ACS health and safety protocols.

3.4.3.1 Contact Rates

- **Incidental Ingestion Rate of Surface and Subsurface Soil**
  For the high-end scenario, the construction worker is assumed to ingest 480 mg of soil per day, based on USEPA (1991a, 1993a). Under the typical scenario, the construction worker is assumed to ingest 100 mg of soil per day, based on USEPA (1993a).

- **Dermal Contact with Surface and Subsurface Soil: Exposed Skin Surface Area, Soil-Skin Adherence Factor, and Absorption Factor**
  Dermal contact with soil is estimated from the product of the exposed skin surface area, the soil-skin adherence factor, and the chemical-specific absorption factor. The product of the exposed skin surface area and the soil-skin adherence factor is known as the dermal soil loading.

  Based on USEPA (1992f), soil adherence is assumed to be 1.0 mg/cm^2-event for the high-end scenario and 0.2 mg/cm^2-event for the typical scenario. This guidance recommends assuming that a skin area corresponding to 25% of the total body skin area is exposed to soil. Accordingly, surface area is assumed to be 5,800 cm^2 for the high-end scenario and 5,000 cm^2 for the typical scenario.

  The estimates for absorption factors for the construction workers are assumed to be the same as those for the routine worker (as described in Section 3.4.1.1). That is, the assumed absorption factors for both high-end

and typical scenarios are 1% for all organics, except for PCBs which are 6%; and 0.1% for all inorganics, except for cadmium, which is 1% (USEPA 1992f, 1995d).

3.4.3.2 Exposure Frequency

- **Frequency of Incidental Ingestion of Surface and Subsurface Soil**
  Construction activities are assumed to be conducted five days per week for nine months for the high end scenario, or 196 days per year. For the typical scenario, construction activities are assumed to be conducted five days per week for three months, or 65 days per year.

- **Frequency of Dermal Contact with Surface and Subsurface Soil**
  The frequency of dermal contact is assumed to be the same as the frequency of incidental ingestion. Thus, the exposure frequency is assumed to be 196 days per year for the high-end scenario and 65 days per year for the typical scenario.

- **Frequency of Inhalation of Vapor and Particulates in Ambient Air**
  As noted above, the construction worker is assumed to be at the site for 196 days per year under the high-end scenario and 65 days per year under the typical scenario. Because of the high activity level expected for a construction worker, and therefore elevated inhalation rate, the exposure frequency is not adjusted by an exposure time (ET) term to account for the hours per day a receptor is at the site. Thus, the inhalation rate for the construction worker would correspond to 2.5 m^3/hr.

3.4.3.3 Exposure Duration

For both the high-end and typical scenarios, the construction worker is expected to work at the site during the period of construction, or nine months for the high-end scenario and three months for the typical scenario. In the exposure calculation, the exposure duration is expressed as one year because the fraction of the year is accounted for in the exposure frequency.

3.4.3.4 Body Weight

For both the high-end and typical scenarios, the body weight of the construction worker is assumed to be 70 kg, based on the mean adult body weight presented in USEPA (1990a, 1993a).

3.4.3.5 Averaging Times

For both the high-end and typical scenarios, the averaging time for carcinogenic risks is equal to a lifetime of 70 years in days (i.e., 25,550 days). For both the high-end and typical scenarios, the averaging time for noncarcinogenic effects is equal to the exposure period in days: nine months (274 days) for the high-end scenario, and three months (91 days) for the typical scenario.

3.4.4 Hypothetical Trespasser

Potential exposures to trespassers on the Site are estimated using exposure factors for adolescents, 9 to 18 years of age. Although other age groups could trespass at the Site, adolescent exposures are expected to be more significant than those for adults due to the lower body weight of a 9 to 18 year old, and more significant than those of younger children, who are subject to greater adult supervision.

3.4.4.1 Contact Rates

- **Incidental Ingestion Rate of Surface Soil/Sediment**
  The hypothetical trespasser is assumed to ingest 100 mg of soil per day under the high-end scenario, and 50 mg of soil per day under the typical scenario. Consistent with USEPA guidance (1991a, 1997), these ingestion rates are based on the adult soil ingestion rates presented in Calabrese et al. (1990). These ingestion rates are conservative in that they assume that all of the soil ingested each day is from the Site.

- **Dermal Contact with Surface Soil/Sediment: Exposed Skin Surface Area, Soil-Skin Adherence Factor, Absorption Factors**
  The trespasser is assumed to contact soil/sediment while walking through On-Site Areas 1, 2, and 3 (future only), or while loitering in On-Site Areas 4A and 4B (current and future).

Based on USEPA (1992f), soil adherence is assumed to be 1.0 mg/cm^2-event for the high-end scenario and 0.2 mg/cm^2-event for the typical scenario. This guidance recommends assuming that a skin area corresponding to 25% of the total body skin area is exposed to soil. Accordingly, surface area is assumed to be 4,400 cm^2 for the high-end scenario which is 25% of the 95th percentile of total body surface areas for 9 to 18 year olds. Similarly, surface area is assumed to be 3,600 cm^2 for the typical scenario, using 25% of the 50th percentile total body surface areas for this age group.

The assumed absorption factors for both high-end and typical scenarios are 1% for cadmium and 6% PCBs, based on USEPA (1992f); and 1% for all other organics and 0.1% for all other inorganics, based on USEPA (1995d).

- **Incidental Ingestion Rate of Surface Water**

  Under the high-end and typical scenarios, the trespasser is assumed to ingest 0.1 liters and 0.05 liters of water per day, respectively, while engaging in recreational activities on-site such as splashing water in the marsh in Area 4A or the occasional puddle in Area 4B. The ingestion rate is conservatively based on the amount of water expected to be ingested while swimming, 0.05 L/hour, presented in USEPA (1989), and the assumption that the trespasser will contact surface water for two hours per day.

- **Dermal Contact with Surface Water: Exposed Skin Surface Area, Dermal Permeability Coefficient, and Exposure Time**

  Dermal contact with constituents in water is estimated from the product of the exposed skin surface area and the chemical-specific permeability coefficient. The body surface areas provided in USEPA (1992f) were used to estimate the exposed surface areas for a trespasser between the ages of 9 and 18. For the high-end scenario, the trespasser is assumed to have an exposed skin surface area of 4,400 cm^2, based on the assumption that 25% of the trespasser's total body surface area has the potential to contact water and using the 95th percentile of total body surface areas for this age group. For the typical scenario, the trespasser is assumed to have an exposed skin surface area of 3,600 cm^2, using 25% of the 50th percentile total body surface areas for this age group.

Chemical-specific K_p values were estimated using Equation 5.8 from USEPA (1992f), and a default K_p value of 10^{-3} cm/hour was assigned to those inorganic constituents that are not listed in USEPA (1992f). An upper limit of one cm/hour for K_p was established based on USEPA (1992f).

The trespasser is expected to be on facility property for up to four hours per day under the high-end scenario and two hours per day under the typical scenario, consistent with USEPA Region 5 guidance. It is assumed that half the time spent at the Site would involve direct contact with marsh or puddle water (i.e., two hours/day and one hour/day for the high-end and typical scenarios, respectively).

3.4.4.2 Exposure Frequency

- **Frequency of Incidental Ingestion of Soil/Sediment**
  For Areas 4A and 4B under current land use and all Areas under future land use, the standard default Region 5 trespasser scenario is assumed: the frequency of trespassing is 54 days per year under the high-end scenario and 12 days per year under the typical scenario. The high-end scenario assumes trespassing one day per week in April, May, September, and October and three days per week during the summer months of June, July, and August. The typical scenario assumes one day per week during the summer months of June, July, and August.

- **Frequency of Dermal Contact with Soil/Sediment**
  Dermal contact with soil/sediment is assumed to occur with the same frequency as soil/sediment ingestion. Thus, the exposure frequency is 54 days per year for the high-end scenario and 12 days per year for the typical scenario, for current exposure in Areas 4A and 4B and future exposures in all Areas.

- **Frequency of Inhalation of Vapor and Particulates in Ambient Air, including Exposure Time (ET) Term**
  The frequency that a trespasser inhales vapor or airborne particulate matter from the site is assumed to be equal to the exposure frequency described above for contact with soil. For the inhalation pathway, the exposure frequency is adjusted with an exposure time (ET) term to account for the

hours per day a receptor is expected to inhale site contaminants. Consistent with the standard default Region 5 trespasser scenario, the trespasser is assumed to visit the site and potentially inhale site contaminants for four out of 24 hours per day for the current high-end scenarios for Areas 4A and 4B and for future high-end scenarios for all on-site Areas.

- **Frequency of Incidental Ingestion of Surface Water**
  Under the high-end scenario, the trespasser is assumed to incidentally ingest surface water approximately once a week during the summer months, or 14 days per year. Under the typical scenario, the trespasser is assumed to incidentally ingest surface water once a month during the summer months, or three days per year.

- **Frequency of Dermal Contact with Surface Water**
  The frequency that a trespasser may have dermal contact with surface water is assumed to be equal to the frequency that a trespasser may incidentally ingest surface water as described above.

3.4.4.3 Exposure Duration

An exposure duration of 10 years is assumed for the hypothetical trespasser under the high-end scenario, based on the total years in the 9 to 18-year-old age group. Typical exposure durations are likely to be much shorter than this given that the Site is an active manufacturing facility. In addition, the availability of recreational areas nearby (e.g., Oak Ridge Prairie Park) makes extended trespassing at the Site less likely. Therefore, an exposure duration of two years is assumed for the trespasser under the typical scenario.

3.4.4.4 Body Weight

A body weight of 50 kg is used for the trespasser under both the high-end and typical scenario, based on the average body weight for individuals ages 9 to 18 years (USEPA 1990a).

3.4.4.5 Averaging Times

For both the high-end and typical scenarios, the averaging time for evaluating carcinogenic risks is equal to a lifetime of 70 years in days (i.e., 25,550 days). For both the high-end and typical scenarios, the averaging time for evaluating noncarcinogenic effects is equal to the exposure duration in days. Since trespassing is expected to be a seasonal exposure (i.e., occurring during only three to seven months of the year), the averaging time is equal to the number of days in the season multiplied by the number of years of exposure. For example, the high-end scenario averaging time for a trespasser contacting sediment in Area 4A is calculated: (7 months/12 months) x (365 days/year) x (10 years), which equals 2,129 days.

3.4.5 Residential

Potential exposures to residential receptors are estimated using exposure factors for adults and for children (ages one to six).

3.4.5.1 Contact Rates

- **Incidental Ingestion Rate of Soil and Sediment**
  Under the high-end scenario, the adult and child resident are assumed to ingest 100 mg of soil/sediment per day and 400 mg of soil/sediment per day, respectively, based on USEPA (1993a, 1997). Under the typical scenario, the adult and child resident are assumed to ingest 50 mg/day and 100 mg/day, respectively, based on USEPA (1997).

- **Dermal Contact with Soil and Sediment: Exposed Skin Surface Area, Soil-Skin Adherence Factor, and Absorption Factor**
  Adult and child residents in Area 5A are assumed to contact soil in their yards. The adult and child residents in Area 6 are assumed to contact sediment from a stream in their yard.

  Based on USEPA (1992f), soil adherence is assumed to be 1.0 mg/cm^2-event for the high-end scenario and 0.2 mg/cm^2-event for the typical scenario. This guidance recommends assuming that a skin area corresponding to 25% of the total body skin area is exposed to soil. Accordingly, adult surface area is assumed to be 5,800 cm^2 for the high-end scenario and 5,000 cm^2 for the typical scenario. Surface area for child

residents is assumed to be 2,100 cm^2 for the high-end scenario and 1,800 cm^2 for the typical scenario.

USEPA's (1992f) chemical-specific absorption factors of 1% for cadmium and 6% for PCBs are used in this assessment. The default absorption factors recommended in USEPA (1995d), 1% for organics and 0.1% for inorganics, are used for all other chemicals.

- **Incidental Ingestion Rate of Ground Water During Outdoor Activities**
Residents may contact ground water while engaging in outdoor activities that could hypothetically involve the use of ground water from a private well, such as watering a lawn or washing a car. To evaluate this pathway, the adult resident is assumed to use ground water while gardening. The child resident is assumed to be exposed to ground water used in a swimming/ wading pool.

  Under both the high-end and typical scenarios, the adult resident is assumed to ingest 0.05 liters of water per day. This ingestion rate is conservatively based on the amount of water expected to be ingested while swimming, 0.05 L/hour, presented in USEPA (1989) and the expectation that the resident would water the lawn for one hour per day, based on the estimated time spent gardening (USEPA 1996b).

  The child resident is assumed to ingest 0.15 liters per day under the high-end scenario and 0.05 liters per day under the typical scenario. These ingestion rates are based on USEPA guidance for ingestion while swimming (USEPA 1989) and the assumption that a child spends three hours per day swimming/wading under the high-end scenario and one hour per day swimming/wading under the typical scenario (USEPA 1997c).

- **Ingestion Rate of Drinking Water**
Based on the 90th percentile drinking water ingestion rates provided by USEPA (1989, 1991a), high-end drinking water rates of two L/day for adults and one L/day for children were used for ingestion of drinking water obtained from ground water. For typical exposures, adults are expected to drink 1.4 L/day and children are expected to drink 0.5 L/day, based on average water drinking water ingestion rates (USEPA 1989).

- **Dermal Contact with Ground Water During Outdoor Activities: Exposed Skin Surface Area, Dermal Permeability Coefficient, and Exposure Time**

  Dermal contact with constituents in water is estimated from the product of the exposed skin surface area and the permeability constant for a chemical. The adult resident is assumed to use ground water for watering the lawn. The assumed exposed skin surface areas while watering the lawn are 5,800 cm^2 for the high-end scenario and 5,000 cm^2 for the typical scenario (USEPA 1992f). For both the high-end and typical scenarios, the adult resident is expected to water the lawn for one hour per day (USEPA 1996b).

  The child resident is assumed to be exposed to ground water in a swimming/wading pool. The assumed skin surface areas are 8,400 cm^2 for the high-end scenario and 7,200 cm^2 for the typical scenario. These are based on the total body surface area of boys and girls, ages one to six (USEPA 1997c). A child resident is assumed to swim/wade for three hours per day and one hour per day for the high-end and typical scenarios, respectively (USEPA 1997c).

  Chemical-specific K_p values were estimated using Equation 5.8 from USEPA (1992f), and a default K_p value of 10^{-3} cm/hour was assigned to those inorganic constituents that are not listed in USEPA (1992f). An upper limit of one cm/hour for K_p was established based on USEPA (1992f).

- **Dermal Contact with Ground Water While Showering or Bathing: Exposed Skin Surface Area, Dermal Permeability Coefficient, and Exposure Time**

  Whole body exposure is used for both the high-end and typical showering/bathing scenarios (i.e., 23,000 and 20,000 cm^2 for adults and 8,400 and 7,200 cm^2 for children).

  Based on USEPA (1997c), the high-end exposure time for a shower is 35 minutes per day and the typical exposure time for a shower is 10 minutes per day. Based on USEPA (1997c), the high-end exposure time for bathing is 45 minutes per bath and the typical exposure time is 20 minutes.

  Chemical-specific K_p values were estimated using Equation 5.8 from USEPA (1992f), and a default K_p value of 10^{-3} cm/hour was assigned to those inorganic constituents that are not listed in USEPA (1992f). An upper limit of one cm/hour for K_p was established based on USEPA (1992f).

3.4.5.2 Exposure Frequency

- **Frequency of Incidental Ingestion of and Dermal Contact with Soil**
  Under both the typical and high-end scenario, adult and child residents in Area 5A are assumed to have an exposure frequency of 350 days per year (USEPA 1991a).

- **Frequency of Incidental Ingestion of Sediment**
  The adult resident in Area 6 is assumed to ingest sediment from a stream in his yard during periodic removal of dead branches and leaves from the stream. For the high-end scenario, the resident is assumed to clean out the stream one day per month in the Spring (3 months) and Fall (3 months) for a total of 6 days per year. For the typical scenario, the resident is assumed to clean out the stream for one day in the Spring and one day in the Fall for a total of two days per year.

  The child resident is expected to ingest sediment when playing in and around a stream in his yard. A child is only expected to play near the stream when weather conditions make this form of play appealing, i.e., the water and mud are not too cold. According to data compiled by NOAA (1993), mean temperatures in South Bend, Indiana, are about 70 degrees or warmer for only three months per year (i.e., June, July and August), based on 30 years of data. Thus, playing near the stream would be most attractive to children during the summer months. The sediment would not be available for contact when it is frozen or snow covered. According to data compiled by NOAA (1993), the mean temperatures in South Bend, Indiana, are below freezing for three months per year (i.e., December, January and February). Thus, the sediment is not available for contact during the winter. On this basis, it is assumed that the child resident will play near the stream for four days a week during the summer (13 weeks) and one day per week during the Spring (13 weeks) and Fall (13 weeks) for a total of 78 days per year, under the high end scenario. For the typical scenario, the child resident is assumed to play near the stream for four days a week during the summer only for a total of 52 days per year.

- **Frequency of Dermal Contact with Sediment**
  The frequency with which a resident has dermal contact with sediment is assumed to be the same as the frequency a resident may incidentally ingest sediment. Thus, the exposure frequency is six days per year and two days per year for the high-end and typical scenarios, respectively, for the adult resident, and 78 days per year and 52 days per year for the high-end and typical scenarios, respectively, for the child resident.

- **Frequency of Inhalation of Vapor and Particulates in Ambient Air, including Exposure Time (ET) Term**
  The resident is assumed to experience inhalation exposures for 350 days/year for the high-end and typical exposure scenarios, based on USEPA (1991a, p. 5) guidance which states "...the common assumption that workers take two weeks of vacation per year can be used to support a value of 15 days per year spent away from home (i.e., 350 days/year spent at home)." The resident is expected to be home for 24 hours per day for the high end scenario. For the typical scenario, the resident is assumed to be home for 18.4 hours out of a 24 hour day (76% of the time), based on recent USEPA (1997c) guidance which states that residents spend 16.4 hours indoors and 2 hours outdoors at one's residence. This is consistent with USEPA (1990a) guidance which states that the average adult spends 64% of his time at home. OK

  In addition, hypothetical residential inhalation exposures are assumed to occur during on-site excavation activities for 10 days/year under the high-end scenario and five days/year under the typical scenario, based on the number of days per year workers are expected to excavate on-site to maintain underground utility lines. Residential inhalation exposure during excavation activities is only assumed to occur for eight out of 24 hours per day, based on the length of a standard work day.

- **Frequency of Incidental Ingestion of Ground Water During Outdoor Activities**
  For the high-end and typical scenarios, the adult resident is assumed to ingest ground water while watering the lawn for 40 days per year, based on the suggested gardening frequency in USEPA (1992f, 1997c).

  For the high-end scenario, the child resident is assumed to ingest ground water while swimming/wading for 36 days per year, which corresponds to

the 90th percentile swimming frequency of young children of 12 days per month from mid-June through mid-September (USEPA 1997c).

For the typical scenario, the child resident is assumed to swim in a home swimming/wading pool 9 days per year. This corresponds to the 50th percentile swimming frequency of young children of three times per month (USEPA 1997c) from mid-June to mid-September.

- **Frequency of Ingestion of Drinking Water**
  For both the high-end and typical scenarios, the resident is assumed to ingest drinking water for 350 days/year, based on the days per year residents are assumed to spend at home (USEPA 1991a).

- **Frequency of Dermal Contact with Ground Water During Outdoor Activities**
  The frequency with which a resident may contact ground water while outdoors is assumed to be equal to the frequency a resident may ingest water outdoors as described above. Thus, the adult resident is assumed to contact ground water outdoors 40 days per year. The child resident is assumed to contact ground water outdoors 36 days per year under the high-end scenario and 9 days per year under the typical scenario.

- **Frequency of Dermal Contact with Ground Water While Showering/ Bathing**
  For both the high-end and typical scenarios, the adult resident is assumed to shower in ground water for 350 days/year, based on the days per year residents are assumed to spend at home (USEPA 1991a) and an assumed showering frequency of once per day (USEPA 1997c). The child resident (ages 1-6 years) is assumed to take a bath five days per week for the high-end scenario and three days per week for the typical scenario.

- **Frequency of Inhalation of Vapors from Ground Water During Household Use including Exposure Time (ET) Term**
  For both the high-end and typical scenarios, the adult and child residents are assumed to inhale contaminants from ground water in their homes for 350 days/year, based on the days per year residents are assumed to spend at home (USEPA 1991a). For the inhalation pathway, the exposure frequency

is adjusted by an exposure time (ET) term to account for the hours per day a receptor is expected to inhale contaminants indoors. For the high-end scenario, the residents are assumed to be in their home 23.3 hours per day based on the 90th percentile value for the estimated time spent indoors at home presented in USEPA (1997c) guidance. For the typical scenario, the residents are assumed to be in their home 16.4 hours per day based on the 50th percentile value for the estimated time spent indoors at home presented in USEPA (1997c) guidance.

3.4.5.3 Exposure Duration

For the high-end scenario, the adult resident is assumed to live adjacent to the Site for 30 years, based on the 90th percentile for individuals living at one residence (USEPA 1991a, 1989). For the typical scenario, the adult resident is assumed to live adjacent to the facility for 9 years, based on the median number of years that individuals live at one residence (USEPA 1991a, 1989). Under both the high-end and typical scenarios, the child resident is assumed to live adjacent to the site for six years, based on the number of years in the child's one to six year old age group.

3.4.5.4 Body Weight

For both the high-end and typical scenarios, the body weight of the adult resident is assumed to be 70 kg based on the mean adult body weight (USEPA 1990a, 1993a). For both the high-end and typical scenarios, the body weight of the child resident is assumed to be 15 kg based on the mean body weight for a child (USEPA 1990a, 1991a).

3.4.5.5 Averaging Times

For both the high-end and typical scenarios, the averaging time for evaluating carcinogenic risks is equal to a lifetime of 70 years (i.e., 25,550 days). For both the high-end and typical scenarios, the averaging time for evaluating noncarcinogenic effects is equal to the exposure duration in days. For year-round exposures, such as showering or bathing, the averaging time is equal to the number of days in a year multiplied by the number of years of exposure. For seasonal exposures, such as swimming in an outdoor pool, the averaging time is equal to the number of days in the season multiplied by the number of years of exposure. For example, the averaging time for a child swimming/wading scenario is calculated: (3 months/ 12 months) x (365 days/year) x (6 years), which equals 548 days.

3.4.6 Off-Site Utility Maintenance Worker (Area 5B)

The exposure factors used in the baseline risk assessment for future utility maintenance workers engaged in excavation activities in Area 5B are discussed below.

3.4.6.1 Contact Rates

- **Dermal Contact with Ground Water While Excavating: Exposed Skin Surface Area, Dermal Permeability Coefficient, and Exposure Time**
  The dermal contact rate for water exposures is obtained from the product of the exposed skin surface area and the chemical-specific permeability coefficient. The estimates for exposed skin surface area for the excavation workers are assumed to be the same as those for the routine worker (as described in Section 3.4.1.1). That is, the exposed skin surface area is 5,800 cm^2 for high-end exposures, and 5,000 cm^2 for typical exposures. The entire exposed skin area is conservatively assumed to come in direct contact with ground water during excavation.

  K_p values were estimated using Equation 5.8 from USEPA (1992f), and a default K_p value of 10^{-3} cm/hour was assigned to those inorganic constituents that are not listed in USEPA (1992f). An upper limit of one cm/hour for K_p was established based on USEPA (1992f).

  For the high-end and typical scenarios, the excavation worker is conservatively assumed to be engaged in excavation work that would bring him in contact with ground water for eight hours per day, in Areas 1 and 4B only.

3.4.6.2 Exposure Frequency

- **Frequency of Inhalation of Vapor and Particulates in Ambient Air**
  As noted above, the utility maintenance worker is assumed to be engaged in activities to maintain underground utility lines for 10 days per year under the high-end scenario and five days per year under the typical scenario. Because of the high activity level expected for a utility maintenance worker, and therefore elevated inhalation rate, the exposure frequency is not adjusted by an exposure time (ET) term to account for the hours per day a receptor is at the site. Thus, the inhalation rate for the utility maintenance worker would correspond to 2.5 m^3/hr.

- **Frequency of Dermal Contact with Ground Water While Excavating** The frequency with which a worker may have dermal contact with water while excavating is assumed to be equal to the frequency a utility maintenance worker may incidentally ingest soil. Thus, the exposure frequency is assumed to be 10 days per year for the high-end scenario and five days/year for the typical scenario.

3.4.6.3 Exposure Duration

For the high-end scenario, the worker is expected to work at the facility for 20 years, based on the 99th percentile for worker tenure at one location (USEPA 1993a). For the typical scenario, the worker is expected to work at the facility for five years, based on the USEPA guidance (USEPA 1993a) central tendency value for worker tenure at one location.

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3.4.6.4 Body Weight

For both the high-end and typical scenarios, the body weight of the excavation worker is assumed to be 70 kg, based on the mean adult body weight presented in USEPA (1990a, 1993a).

3.4.6.5 Averaging Times

For both the high-end and typical scenarios, the averaging time for carcinogenic risks is equal to a lifetime of 70 years in days (i.e., 25,550 days). For both the high-end and typical scenarios, the averaging time for noncarcinogenic effects is equal to the exposure duration in days, calculated as the product of the exposure frequency and the exposure duration.

APPENDIX B

Human Health Risk Assessment
Estimation of Air Emission and Dispersion

CONTENTS

TABLES

FIGURE

ATTACHMENTS

Attachment 4: ISCST3 Model Output File for Emissions During Pretreatment/Materials Handling Study (Focus 1997)

1.0 ESTIMATION OF AIR EMISSION AND DISPERSION

1.1 Vapor Emission from Unsaturated Soil

The annual average vapor flux from unsaturated soil is conservatively estimated using an unsteady-state model derived by Jury et al. (1983, 1990). This approach assumes that volatile substances are present in the soil to a finite depth and is provided in USEPA's *Soil Screening Guidance* (USEPA 1996). The *Soil Screening Guidance* also recognizes that more refined models are available that account for the presence of a cover. The Jury model is given by:

$$J_v = C_{s,0}\sqrt{\frac{D_E}{\pi T}}\cdot[1-\exp(-d_s^2/4D_E T)]\cdot\frac{kg}{10^3 g}\cdot\frac{10^4 cm^2}{m^2}$$

$$D_E = \frac{D_G H + D_L}{\rho_b K_d + \theta_w + \theta_a H}$$

$$D_G = D_{air}\cdot\frac{\theta_a^{10/3}}{n^2}$$

$$D_L = D_{water}\cdot\frac{\theta_w^{10/3}}{n^2}$$

where:

J_v	=	average vapor flux over period T (mg-chemical/m^2-s)
$C_{s,0}$	=	initial chemical concentration in soil (mg-chemical/kg-soil)
ρ_b	=	soil bulk density (g-soil/cm^3-soil)
D_E	=	effective diffusion coefficient (cm^2/s)
T	=	exposure interval (s)
d_s	=	depth of soil contamination at t=0 (cm)
D_G	=	effective gas-phase diffusion coefficient (cm^2/s)
D_L	=	effective liquid-phase diffusion coefficient (cm^2/s)
H	=	Henry's law constant (unitless)
K_d	=	soil-to-water partition coefficient (L-water/kg-soil)
D_{air}	=	diffusion coefficient in air (cm^2/s)

D_{water} = diffusion coefficient in water (cm^2/s)
θ_a = air-filled soil porosity (L-air/L-soil)
θ_w = water-filled soil porosity (L-water/L-soil)
n = soil porosity (L-pore/L-soil)

The values proposed by USEPA (USEPA 1996) for chemical-specific parameters and soil-specific parameters are used as default values in calculating J_v unless site-specific data are available (see Tables B-1 through B-6).

USEPA guidance (1996) recommends the use of this volatilization model where the soil concentration of a substance is at or below the soil saturation concentration of the substance (C_{sat}). The soil saturation concentration is defined as the concentration at which the adsorptive limits of the soil particles and the solubility limits of the available soil moisture have been reached. C_{sat} is given by:

$$C_{sat} = K_d\, s + \left(s\theta_w + sH\theta_a \right)/\rho_b$$

where:

K_d = soil-to-water partition coefficient (L-water/kg-soil)
s = solubility of a substance in water (mg-chemical/L-water)
θ_w = soil water content (L-water/L-soil)
H = Henry's law constant (unitless)
θ_a = air-filled soil porosity (L-air/L-soil)
ρ_b = soil bulk density (kg-soil/L-soil)

For soil concentrations greater than C_{sat}, the model is expected to overestimate vapor flux (USEPA 1996).

1.2 Vapor Emission from Surface Water and Exposed Ground Water

The steady-state emission of chemical from ground water pooled on soil surface is estimated using an overall mass transfer coefficient that accounts for mass transfer of the chemical through the water-air interfacial films. The flux of chemical through the water-air interface is given by:

$$J_L = K_L \cdot C_{gw} \cdot \frac{L}{10^3\ cm^3} \cdot \frac{10^4\ cm^2}{m^2}$$

$$\frac{1}{K_L} = \frac{1}{k_L} + \frac{1}{k_G H}$$

where:

J_L	=	steady-state vapor flux (mg-chemical/m^2-s)
K_L	=	overall mass transfer coefficient (cm/s)
C_{gw}	=	chemical concentration in ground water (mg-chemical/L-water)
k_L	=	liquid-phase mass transfer coefficient (cm/s)
k_G	=	gas-phase mass transfer coefficient (cm/s)
H	=	Henry's law constant (unitless)

The method for estimating the liquid-phase and gas-phase mass transfer coefficients is from USEPA (1992), as follows:

$$k_{Li} = \left(\frac{MW_{O_2}}{MW_i}\right)^{0.5} \left(\frac{T}{298}\right) \left(k_{L,O_2}\right)$$

$$k_{Gi} = \left(\frac{MW_{H_2O}}{MW_i}\right)^{0.335} \left(\frac{T}{298}\right)^{1.005} \left(k_{G,H_2O}\right)$$

where:

k_{Li}	=	liquid-phase mass transfer coefficient for chemical i (cm/s)
k_{Gi}	=	gas-phase mass transfer coefficient for chemical i (cm/s)
MW_{O2}	=	molecular weight of oxygen (32 g/mole)
MW_{H2O}	=	molecular weight of water (18 g/mole)
MW_i	=	molecular weight of chemical i (g/mole)
T	=	absolute temperature (°K)
$k_{L,O2}$	=	liquid-phase mass transfer coefficient for oxygen (0.002 cm/s)
$k_{G,H2O}$	=	gas-phase mass transfer coefficient for water vapor at 25°C (0.833 cm/s)

1.3 Vapor Emission from Covered Ground Water

A one-dimensional steady-state diffusion model using Fick's Law was employed for estimating the theoretical vapor flux from substances in ground water below a layer of cover soil. The vapor flux is obtained from the concentration gradient through a capillary fringe and unsaturated soil:

$$J = \frac{1}{\frac{L_{cf}}{D_L} + \frac{L_a}{H \cdot D_G}} \cdot \left(C_w \cdot \frac{1000\ L}{m^3} - C_a\right) \cdot \frac{m^2}{10^4\ cm^2}$$

$$D_G = D_{air} \cdot \frac{\theta_a^{10/3}}{n^2}$$

$$D_L = D_{water} \cdot \frac{\theta_w^{10/3}}{n^2}$$

where:

J	=	steady-state vapor flux (mg-chemical/m^2-s)
C_w	=	initial chemical concentration in water (mg-chemical/L-water *1000 L/m^3)
C_a	=	initial chemical concentration in air at ground surface (mg-chemical/m^3-air)
D_G	=	effective gas-phase diffusion coefficient (cm^2/s)
D_L	=	effective liquid-phase diffusion coefficient (cm^2/s)
H	=	Henry's law constant (unitless)
L_{cf}	=	thickness of capillary fringe (m)
L_a	=	thickness of unsaturated soil above capillary fringe (m)
D_{air}	=	diffusion coefficient in air (cm^2/s)
D_{water}	=	diffusion coefficient in water (cm^2/s)
θ_a	=	air-filled soil porosity (L-air/L-soil)
θ_w	=	water-filled soil porosity (L-water/L-soil)
n	=	soil porosity (L-pore/L-soil)

1.4 Soil Particulate Emission

The particulate emission model for predicting emissions from undisturbed surface soil is based on the suspension of surface soil by wind erosion. Particulate emission from wind erosion is estimated using the "unlimited reservoir" wind erosion model (USEPA 1996, 1992), which is given by:

$$J_{10} = 0.036\ (1-G)\left(\frac{U_m}{U_t}\right)^3 F(x)\cdot\frac{kg}{10^3 g}\cdot\frac{hour}{3600\ sec}$$

where:

J_{10}	=	annual average flux of respirable soil particles (kg-soil/m^2-s)
0.036	=	correlation coefficient for the respirable fraction
G	=	fraction of soil surface covered; e.g., by vegetation, pavement (unitless)
U_m	=	mean annual wind speed (m/s)
U_t	=	threshold value of wind speed at 7 meters (m/s)
F(x)	=	function dependent on (U_m/U_t), USEPA (1992)

This equation calculates the emission flux of respirable soil particles, which are 10 μm in diameter and smaller (i.e., PM_{10}). For this analysis, it is assumed that the concentration of a substance in respirable soil particles is the same as that in the bulk surface soil. The values recommended by USEPA (1996) for soil-specific parameters are used in the calculation.

Particulate emission resulting from potential on-facility excavation activities is conservatively estimated using empirical data compiled by USEPA (1995a) which pertain to dust emission from "heavy construction operations". The data indicate that dust emission from "heavy construction operations" is 1.2 tons per acre of construction per month of activity (or 1 x 10^{-7} kg-soil/m^2-sec) and consists of particles that are 30 μm in diameter and smaller.

1.5 Atmospheric Dispersion

Except under excavation conditions, air dispersion from the exposure areas is estimated using USEPA's Industrial Source Complex (ISCST3) model (USEPA 1995a). ISCST3 is an advanced steady-state Gaussian plume model that calculates chemical concentrations at specific downwind locations as a function of wind speed, atmospheric stability, temperature gradient, mixing height and downwind distance. Using ISCST3, the output is a dispersion factor, which is an annual average air concentration in milligrams per cubic meter (mg/m^3) for a unit emission flux (i.e., 1 g/m^2-s). These dispersion factors can be converted to units of kg/m^3 per kg/m^2-s by multiplying by a factor of 10^{-3} g/mg. The air concentration of a chemical in air is

calculated by multiplying the dispersion factor given by ISCST3 and the flux of the chemical from soil (or from water).

ISCST3 utilizes hourly meteorological data records to define the conditions for dispersion. To generate the required input meteorological data files, surface meteorological and upper air data files were downloaded from USEPA's SCRAM electronic bulletin board. Surface meteorological data for the Michiana airport in South Bend, Indiana were used. For upper air data, the closest station for which the appropriate data are available is the Bishop airport in Flint, Michigan. A wind rose plot for the South Bend surface air data (NCDC 1997) is shown in Figure B-1. As shown on this plot, the direction of the wind across the Site is towards the residents in Area 5A approximately 29% of the time and towards Area 6 approximately 21% of the time.

Other major assumptions used in the ISCST3 modeling are:

- The emission source is represented as a non-buoyant, zero-momentum area source;
- Suspended particles from the source remain suspended before reaching the receptor (i.e., there is negligible deposition and resuspension); and
- The physical setting of the facility and its immediate surroundings can be modeled as a rural environment with no significant obstructions (e.g., tall buildings, abrupt topography).

For each area source, dispersion factors were developed using ISCST3 for discrete on-facility and off-facility receptor locations. The ISCST3 output files for the dispersion factors used in the revised Baseline Risk Assessment are provided in Attachments 1 through 3. Off-facility receptors are assumed to be located near the intersection of Colfax Avenue and Reder Road for Area 5A, along the Grand Trunk Railroad right-of-way, and along the Chicago & Erie Railroad right-of-way for Area 6. For Areas 1, 2, 3, 4A, and 4B, between six and nine discrete receptor locations were evenly distributed throughout each of the areas. The on-facility workers in each area are assumed to move freely throughout the area, and the applicable area-wide dispersion factor is estimated from the average of the dispersion factors developed for each receptor location within the area.

To evaluate atmospheric dispersion during underground utility maintenance and construction activities, a simple "box" model was used for evaluating exposures of on-site excavation workers, and USEPA's ISCST3 model was used for off-site residents as described above. The "box" model allows for a screening level calculation of air concentrations at the location of the excavation worker, based on the following relationship:

$$CA = \frac{(F)\,(L)}{(V)\,(H)}$$

where:

CA = Chemical concentration in air (ug/m^3)
F = Chemical vapor flux (ug/(m^2-s))
L = Length of excavation zone (m)
V = Wind speed (m/s)
H = Height of box (m)

In this analysis, L is set at 5 meters for utility maintenance and 30 meters for construction excavation; V is set at 4.5 m/s, and H is set at the height of a typical receptor, 2 m.

1.6 Estimated Ambient Air Concentrations

Ambient air concentrations for each receptor in the revised Baseline Risk Assessment were calculated by combining the emission estimates for each source area with the dispersion values specific to each source area/receptor area combination. For each of the following source areas, emissions were estimated from the media identified in Section 3.2:

- Area 1: particulate and vapors from soil during routine operations; vapors from exposed ground water and soil during excavation for utility maintenance;
- Area 2: particulate and vapors from soil during routine operations and excavation for utility maintenance and construction;
- Area 3: particulate and vapors from soil during routine operations and excavation for utility maintenance and construction;
- Area 4A: vapors from surface water in the wetlands; and
- Area 4B: vapors from covered ground water during routine operations; vapors from exposed ground water during excavation.

Ambient air concentrations were calculated by combining the emissions from each source area and medium with the dispersion to each receptor location. Ambient air concentrations used in the baseline risk assessment were based on the total contribution from all areas.

1.7 Comparison of Modeled Concentrations to Air Monitoring

Results of air emission and dispersion modeling were compared to ambient air monitoring conducted at the Site during the Pretreatment/Materials Handling Study conducted in July 1997 (Focus 1997). During the study, daily eight-hour ambient air samples were collected in Area 2, approximately 100 feet upwind and 100 feet downwind of the material handling activities (i.e., on-site excavation, trenching, and screening). As described in Focus (1997), sampling was conducted with Summa canisters set to intake a constant sample flow rate for eight hours of sampling time; the sample collected was therefore a composite sample of air for the eight hour span. Samples were analyzed using EPA Method TO14.

Modeling was conducted consistent with the data and approaches used in the revised Baseline Risk Assessment, and approximating the conditions that existed during the study. Thus, vapor emissions from Area 2 were estimated using the model for emissions from unsaturated soil. All subsurface (i.e., two to ten feet below ground surface) soil concentration data available for Area 2 were used to estimate emissions. Two summary statistics for soil concentration were applied in the air emission calculations: (1) maximum soil concentrations in Area 2, and (2) the lower of the maximum and 95% UCL soil concentrations in Area 2. The risk assessment generally used the lower of the maximum and 95% UCL soil concentrations to estimate emissions, but used the maximum soil concentrations to calculate the bounding estimates discussed in Section 5.3 (Uncertainty Analysis). For comparison to the Focus results, dispersion was estimated with the ISCST3 model assuming a source area size of 20 meters by 30 meters, for eight receptors located approximately 100 feet from the source in all directions of the compass. The ISCST3 model used surface and upper air data described in previous sections for the Michiana airport in South Bend, Indiana, and the Bishop airport in Flint, Michigan, respectively. The ISCST3 output file is provided in Attachment 4.

For each chemical detected in air samples from the Focus (1997) study, the maximum monitored air concentration was compared to the highest eight-hour average modeled ambient air concentrations. Modeled ambient air concentrations based on maximum Area 2 soil concentrations ranged from approximately 5 to 200 times the maximum measured ambient air concentrations. Modeled ambient air concentrations based on the lower of the maximum or 95% UCL soil concentrations ranged from 0.9 to 28 times the maximum measured ambient air concentrations. Thus, ambient air concentrations estimated in the risk assessment with ISCST3 are likely to be conservative estimates of potential concentrations.

2.0 REFERENCES

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TABLES

TABLE B-1

Physical/Chemical Parameter Values for Chemicals of Potential Concern
ACS NPL Site, Griffith, IN

	1. Koc L/KG			2. Kd L/KG			3. H UNITLESS			4. Dair CM2/SEC			5. Dwater CM2/SEC			6. MW G/MOL			7. S MG/L		
	VALUE	R	N	VALUE	R	N	VALUE	R	N	VALUE	R	N	VALUE	R	N	VALUE	R	N	VALUE	R	N
1. VOC																					
1,1,1-Trichloroethane	1.1e+02	44					7.1e-01	44		7.8e-02	44		8.8e-06	44		1.3e+02	1		1.3e+03	44	
1,1,2,2-Tetrachloroethane	9.3e+01	44					1.4e-02	44		7.1e-02	44		7.9e-06	44		1.7e+02	1		3.0e+03	44	
1,1,2-Trichloroethane	5.0e+01	44					3.7e-02	44		7.8e-02	44		8.8e-06	44		1.3e+02	1		4.4e+03	44	
1,1-Dichloroethane	3.2e+01	44					2.3e-01	44		7.4e-02	44		1.0e-05	44		9.9e+01	1		5.1e+03	44	
1,1-Dichloroethene	5.9e+01	44					1.1e+00	44		9.0e-02	44		1.0e-05	44		9.7e+01	1		2.3e+03	44	
1,2-Dichloroethane	1.7e+01	44					4.0e-02	44		1.0e-01	44		9.9e-06	44		9.9e+01	1		8.5e+03	44	
1,2-Dichloroethene (total)	5.0e+01		28				2.3e-01		28	7.1e-02		28	9.2e-06		50	9.7e+01		52	8.0e+03		28
1,2-Dichloropropane	4.4e+01	44					1.2e-01	44		7.8e-02	44		8.7e-06	44		1.1e+02	1		2.8e+03	44	
2-Butanone							1.9e-03	1		8.5e-02		50	9.2e-06		50	7.2e+01	1				
2-Hexanone							7.2e-02	1		8.5e-02		50	9.2e-06		50	1.0e+02	1		3.5e+04	1	
4-Methyl-2-pentanone							6.1e-04	1		8.5e-02		50	9.2e-06		50	1.0e+02	1		1.9e+04	1	
Acetone	5.8e-01	44					1.6e-03	44		1.2e-01	44		1.1e-05	44		5.8e+01	1		1.0e+06	44	
Benzene	5.9e+01	44					2.3e-01	44		8.8e-02	44		9.8e-06	44		7.8e+01	1		1.8e+03	44	
Carbon Disulfide	4.6e+01	44					1.2e+00	44		1.0e-01	44		1.0e-05	44		7.6e+01	1		1.2e+03	44	
Carbon Tetrachloride	1.7e+02	44					1.3e+00	44		7.8e-02	44		8.8e-06	44		1.5e+02	1		7.9e+02	44	
Chlorobenzene	2.2e+02	44					1.5e-01	44		7.3e-02	44		8.7e-06	44		1.1e+02	1		4.7e+02	44	
Chloroethane							2.8e-01	1		8.5e-02		50	9.2e-06		50	6.5e+01	1		5.7e+03	1	
Chloroform	4.0e+01	44					1.5e-01	44		1.0e-01	44		1.0e-05	44		1.2e+02	1		7.9e+03	44	
Chloromethane										8.5e-02		50	9.2e-06		50	5.0e+01	1				
Ethyl Benzene	3.6e+02	44					3.2e-01	44		7.5e-02	44		7.8e-06	44		1.1e+02	1		1.7e+02	44	
Methylene Chloride	1.2e+01	44					9.0e-02	44		1.0e-01	44		1.2e-05	44		8.5e+01	1		1.3e+04	44	
Styrene	7.8e+02	44					1.1e-01	44		7.1e-02	44		8.0e-06	44		1.0e+02	1		3.1e+02	44	
Tetrachloroethene	1.6e+02	44					7.5e-01	44		7.2e-02	44		8.2e-06	44		1.7e+02	1		2.0e+02	44	
Tetrahydrofuran										8.5e-02		50	9.2e-06		50						
Toluene	1.8e+02	44					2.7e-01	44		8.7e-02	44		8.6e-06	44		9.2e+01	1		5.3e+02	44	
Trichloroethene	1.7e+02	44					4.2e-01	44		7.9e-02	44		9.1e-06	44		1.3e+02	1		1.1e+03	44	
Vinyl Chloride	1.9e+01	44					1.1e+00	44		1.1e-01	44		1.2e-06	44		6.3e+01	1		2.8e+03	44	
Xylenes (total)	3.9e+02		47				2.8e-01		47	7.8e-02		47	8.8e-06		47	1.1e+02	1		1.8e+02		47
cis-1,2-Dichloroethene	3.6e+01	44					1.7e-01	44		7.4e-02	44		1.1e-05	44		9.7e+01	1		3.5e+03	44	
m,p-xylene	4.0e+02		49				3.1e-01		49	7.3e-02		49	8.1e-06		49	1.1e+02		51	1.7e+02		49
ortho-xylene	3.6e+02	44					2.1e-01	44		8.7e-02	44		1.0e-05	44		1.1e+02		51	1.8e+02	44	
trans-1,2-Dichloroethene	5.3e+01	44					3.9e-01	44		7.1e-02	44		1.2e-05	44		9.7e+01	1		6.3e+03	44	
2. SVOC																					
1,2,4-Trichlorobenzene	1.8e+03	44					5.8e-02	44		3.0e-02	44		8.2e-06	44		1.8e+02	1		3.0e+02	44	
1,2-Dichlorobenzene	6.2e+02	44					7.8e-02	44		6.9e-02	44		7.9e-06	44		1.5e+02	1		1.6e+02	44	
1,3-Dichlorobenzene							1.3e-01	1		4.7e-02		50	7.0e-06		50	1.5e+02	1				
1,4-Dichlorobenzene	6.2e+02	44					10.0e-02	44		6.9e-02	44		7.9e-06	44		1.5e+02	1		7.4e+01	44	
2,2'-oxybis(1-Chloropropane)							4.5e-03	1		6.0e-02	11		7.0e-06		50	1.7e+02	1		1.7e+03	1	
2,4,5-Trichlorophenol	1.6e+03	44					1.8e-04	44		2.9e-02	44		7.0e-06	44		2.0e+02	1		1.2e+03	44	
2,4,6-Trichlorophenol	3.8e+02	44					3.2e-04	44		3.2e-02	44		6.3e-06	44		2.0e+02	1		8.0e+02	44	
2,4-Dichlorophenol	1.5e+02	44					1.3e-04	44		3.5e-02	44		8.8e-06	44		1.6e+02	1		4.5e+03	44	
2,4-Dimethylphenol	2.1e+02	44					8.2e-05	44		5.8e-02	44		8.7e-06	44		1.2e+02	1		7.9e+03	44	
2,4-Dinitrotoluene	9.6e+01	44					3.8e-06	44		2.0e-01	44		7.1e-06	44		1.8e+02	1		2.7e+02	44	
2,6-Dinitrotoluene	6.9e+01	44					3.1e-05	44		3.3e-02	44		7.3e-06	44		1.8e+02	1		1.8e+02	44	
2-Chloronaphthalene							2.5e-02	1		4.7e-02		50	7.0e-06		50	1.6e+02	1		6.7e+00	1	
2-Chlorophenol	3.9e+02	44					1.6e-02	44		5.0e-02	44		9.5e-06	44		1.3e+02	1		2.2e+04	44	
2-Methylnaphthalene							2.0e-02	1		4.7e-02		50	7.0e-06		50	1.4e+02	1		2.6e+01	1	
2-Methylphenol	9.1e+01	44					4.9e-05	44		7.4e-02	44		8.3e-06	44		1.1e+02	1		2.6e+04	44	
2-Nitroaniline							4.0e-03	1		7.3e-02	11		7.0e-06		50	1.4e+02	1		1.3e+03	1	
3,3'-Dichlorobenzidine	7.2e+02	44					1.6e-07	44		1.9e-02	44		6.7e-06	44		2.5e+02	1		3.1e+00	44	
4-Bromophenyl-phenylether							4.1e-03	1		4.7e-02		50	7.0e-06		50	2.5e+02	1				
4-Chloro-3-methylphenol							1.0e-04	1		4.7e-02		50	7.0e-06		50	1.4e+02	1		3.9e+03	1	

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ACS NPL Site, Griffith, IN

	1. Koc L/KG			2. Kd L/KG			3. H UNITLESS			4. Dair CM2/SEC			5. Dwater CM2/SEC			6. MW G/MOL			7. S MG/L		
	VALUE	R	N	VALUE	R	N	VALUE	R	N	VALUE	R	N	VALUE	R	N	VALUE	R	N	VALUE	R	N
2. SVOC																					
4-Chlorophenyl-phenyl ether							9.0e-03	1		4.7e-02		50	7.0e-06		50	2.0e+02	1		3.3e+00	1	
4-Methylphenol							1.6e-05	1		4.7e-02		50	7.0e-06		50	1.1e+02	1		2.4e+04	1	
4-Nitrophenol							1.2e-03	1		4.7e-02		50	7.0e-06		50	1.4e+02	1		1.6e+04	1	
Acenaphthene	7.1e+03	44					6.4e-03	44		4.2e-02	44		7.7e-06	44		1.5e+02	1		4.2e+00	44	
Acenaphthylene	1.0e+04	44	46				4.7e-03	1		4.7e-02		50	7.0e-06		50	1.5e+02	1		3.9e+00	1	
Anthracene	3.0e+04	44					2.7e-03	44		3.2e-02	44		7.7e-06	44		1.8e+02	1		4.3e-02	44	
Benzo(a)anthracene	4.0e+05	44					1.4e-04	44		5.1e-02	44		9.0e-06	44		2.3e+02	1		9.4e-03	44	
Benzo(a)pyrene	1.0e+06	44					4.6e-05	44		4.3e-02	44		9.0e-06	44		2.5e+02	1		1.6e-03	44	
Benzo(b)fluoranthene	1.2e+06	44					4.6e-03	44		2.3e-02	44		5.6e-06	44		2.5e+02	1		1.5e-03	44	
Benzo(g,h,i)perylene							5.7e-06	1		4.7e-02		50	7.0e-06		50	2.8e+02	1				
Benzo(k)fluoranthene	1.2e+06	44					3.4e-05	44		2.3e-02	44		5.6e-06	44		2.5e+02	1		8.0e-04	44	
Benzoic Acid	6.0e-01	44					6.3e-05	44		5.4e-02	44		8.0e-06	44		1.2e+02	46		3.5e+03	44	
Benzyl Alcohol										4.7e-02		50	7.0e-06		50	1.1e+02	43				
Butylbenzylphthalate	5.8e+04	44					5.2e-05	44		1.7e-02	44		4.8e-06	44		3.1e+02	1		2.7e+00	44	
Chrysene	4.0e+05	44					3.9e-03	44		2.5e-02	44		6.2e-06	44		2.3e+02	1		1.6e-03	44	
Di-n-butylphthalate	3.4e+04	44					3.9e-08	44		4.4e-02	44		7.9e-06	44		2.8e+02	1		1.1e+01	44	
Di-n-octylphthalate	8.3e+07	44					2.7e-03	44		1.5e-02	44		3.6e-06	44		3.9e+02	1		2.0e-02	44	
Dibenzo(a,h)anthracene	3.8e+06	44					6.0e-07	44		2.0e-02	44		5.2e-06	44		2.8e+02	1		2.5e-03	44	
Dibenzofuran										4.7e-02		50	7.0e-06		50	1.7e+02	1		1.0e+01	1	
Diethylphthalate	2.9e+02	44					1.9e-05	44		2.6e-02	44		6.4e-06	44		2.2e+02	1		1.1e+03	44	
Dimethylphthalate										4.7e-02		50	7.0e-06		50	1.9e+02	1				
Fluoranthene	1.1e+05	44					6.6e-04	44		3.0e-02	44		6.4e-06	44		2.0e+02	1		2.1e-01	44	
Fluorene	1.4e+04	44					2.6e-03	44		3.6e-02	44		7.9e-06	44		1.7e+02	1		2.0e+00	44	
Hexachlorobenzene	5.5e+04	44					5.4e-02	44		5.4e-02	44		5.9e-06	44		2.8e+02	1		6.2e+00	44	
Hexachlorobutadiene	5.4e+04	44					3.3e-01	44		5.6e-02	44		6.2e-06	44		2.6e+02	1		3.2e+00	44	
Indeno(1,2,3-cd)pyrene	3.5e+06	44					6.6e-05	44		1.9e-02	44		5.7e-06	44		2.8e+02	1		2.2e-05	44	
Isophorone	4.7e+01	44					2.7e-04	44		6.2e-02	44		6.8e-06	44		1.4e+02	1		1.2e+04	44	
N-Nitroso-di-n-propylamine	2.4e+01	44					9.2e-05	44		5.5e-02	44		8.2e-06	44		1.3e+02	1		9.9e+03	44	
N-Nitrosodiphenylamine	1.3e+03	44					2.1e-04	44		3.1e-02	44		6.4e-06	44		2.0e+02	1		3.5e+01	44	
Naphthalene	2.0e+03	44					2.0e-02	44		5.9e-02	44		7.5e-06	44		1.3e+02	1		3.1e+01	44	
Pentachlorophenol	5.9e+02	44					1.0e-06	44		5.6e-02	44		6.1e-06	44		2.7e+02	1		2.0e+03	44	
Phenanthrene							1.6e-03	1		4.7e-02		50	7.0e-06		50	1.8e+02	1				
Phenol	2.9e+01	44					1.6e-05	44		8.2e-02	44		9.1e-06	44		9.4e+01	1		8.3e+04	44	
Pyrene	1.1e+05	44					4.5e-04	44		2.7e-02	44		7.2e-06	44		2.0e+02	1		1.4e-01	44	
bis(2-Chloroethoxy)methane							1.5e-05	1		4.7e-02		50	7.0e-06		50	1.7e+02	1		8.1e+04	1	
bis(2-Chloroethyl) ether	1.6e+01	44					7.4e-04	44		6.9e-02	44		7.5e-06	44		1.4e+02	1		1.7e+04	44	
bis(2-Ethylhexyl)phthalate	1.5e+07	44					4.2e-06	44		3.5e-02	44		3.7e-06	44		3.9e+02	1		3.4e-01	44	
3. P/PCB																					
4,4'-DDD	1.0e+06	44					1.6e-04	44		1.7e-02	44		4.8e-06	44		3.2e+02	1		9.0e-02	44	
4,4'-DDE	4.5e+06	44					8.6e-04	44		1.4e-02	44		5.9e-06	44		3.2e+02	1		1.2e-01	44	
4,4'-DDT	2.6e+06	44					3.3e-04	44		1.4e-02	44		4.9e-06	44		3.5e+02	1		2.5e-02	44	
Aldrin	2.5e+06	44					7.0e-03	44		1.3e-02	44		4.9e-06	44		3.6e+02	1		1.8e-01	44	
Aroclor-1242	4.8e+04	34					4.3e-02		24	2.1e-02		26	5.6e-06		50						
Aroclor-1248										1.4e-02		50	5.6e-06		50						
Aroclor-1254	8.1e+05	34					3.0e-02		25	1.3e-02		23	5.6e-06		50				5.2e-02	34	
Aroclor-1260	4.4e+06	34					7.5e-03		25	1.3e-02	34		5.6e-06		50				4.5e-02	34	
Endosulfan I							4.1e-03	1		1.4e-02		50	5.6e-06		50	4.1e+02	1		3.2e-01	1	
Endrin ketone										1.4e-02		50	5.6e-06		50						
Heptachlor	1.4e+06	44					4.5e-02	44		1.1e-02	44		5.7e-06	44		3.7e+02	1		1.8e-01	44	
Heptachlor epoxide	8.3e+04	44					3.9e-04	44		1.3e-02	44		4.2e-06	44		3.9e+02	1		2.0e-01	44	
Methoxychlor	9.8e+04	44					6.5e-04	44		1.6e-02	44		4.5e-06	44		3.5e+02	1		4.5e-02	44	
alpha-BHC	1.2e+03	44					4.4e-04	44		1.4e-02	44		7.3e-06	44		2.9e+02	1		2.0e+00	44	

TABLE B-1

Physical/Chemical Parameter Values for Chemicals of Potential Concern
ACS NPL Site, Griffith, IN

	1. Koc L/KG			2. Kd L/KG			3. H UNITLESS			4. Dair CM2/SEC			5. Dwater CM2/SEC			6. MW G/MOL			7. S MG/L		
	VALUE	R	N	VALUE	R	N	VALUE	R	N	VALUE	R	N	VALUE	R	N	VALUE	R	N	VALUE	R	N
3. P/PCB																					
beta-BHC	1.3e+03	44					3.1e-05	44		1.4e-02	44		7.3e-06	44		2.9e+02	1		2.4e-01	44	
gamma-BHC	1.1e+03	44					5.7e-04	44		1.4e-02	44		7.3e-06	44		2.9e+02	1		6.8e+00	44	
gamma-Chlordane	5.1e+04		44				2.7e-03		44	1.2e-02		44	4.7e-06		44	4.1e+02		8	2.2e-01		44
4. INORG																					
Antimony				4.5e+01	44					3.1e-02		50	6.3e-06		50	1.2e+02	1				
Arsenic				2.9e+01	44	43				3.1e-02		50	6.3e-06		50	7.5e+01	1				
Barium				4.1e+01	44	43				3.1e-02		50	6.3e-06		50	1.4e+02	1				
Beryllium				7.9e+02	44	43				3.1e-02		50	6.3e-06		50	9.0e+00	1				
Cadmium				7.5e+01	44	43				3.1e-02		50	6.3e-06		50	1.1e+02	1				
Chromium (total)				1.9e+01		45				3.1e-02		50	6.3e-06		50	5.2e+01	1				
Cobalt				4.5e+01	35					3.1e-02		50	6.3e-06		50	5.9e+01	1				
Copper				1.0e+04	34					3.1e-02		50	6.3e-06		50	6.4e+01	1				
Cyanide (total)				9.9e+00	44					3.1e-02		50	6.3e-06		50	2.6e+01	1				
Lead				9.0e+02	35					3.1e-02		50	6.3e-06		50	2.1e+02	1				
Manganese				6.5e+01	35					3.1e-02		50	6.3e-06		50	5.5e+01	46				
Mercury				5.2e+01	44	43	4.7e-01	44		3.1e-02	44		6.3e-06	44		2.0e+02	1				
Nickel				6.5e+01	44	43				3.1e-02		50	6.3e-06		50	5.9e+01	1				
Selenium				5.0e+00	44	43				3.1e-02		50	6.3e-06		50	7.9e+01	1				
Silver				8.3e+00	44	43				3.1e-02		50	6.3e-06		50	1.1e+02	1				
Thallium				7.1e+01	44	43				3.1e-02		50	6.3e-06		50	2.0e+02	1				
Vanadium				1.0e+03	44					3.1e-02		50	6.3e-06		50	5.1e+01	1				
Zinc				6.2e+01	44	43				3.1e-02		50	6.3e-06		50	6.5e+01	1				
5. TIC																					
Acetaldehyde																4.4e+01	46				
Acetophenone																1.2e+02	1		5.5e+03	1	
Azobenzene																1.8e+02	46				
Butanol, 1-	6.9e+00	44					3.6e-04	44		8.0e-02	44		9.3e-06	44		1.2e+02	46		7.4e+04	44	
Caprolactam																1.1e+02	46				
Cyclohexanone																9.8e+01	46				
Diethyl ether																7.4e+01	46				
Dioxane, 1,4-																8.8e+01	1				
Ethanol, 2-(2-butoxyethoxy)-																1.6e+02	46				
Hexane, n-																8.6e+01	46				
Phthalic anhydride																1.5e+02	46				

TABLE B-1 (continued)

Notes for Physical/Chemical Parameter Values
ACS NPL Site, Griffith, IN

Note	Comment
8	Based on Chlordane [CASRN 57-74-9].
23	ENVIRON used Aroclor-1260 [CASRN 11096-82-5] value presented in reference 34 as a surrogate.
24	Calculated by ENVIRON from vapor pressure(VP), solubility(S), and mol. weight of the Aroclor as described in ref. 34, page 5-2. The VP was based on the value for Aroclor 1016 presented in ref. 34. The S for Aroclor 1242 was taken from Ref. 3.
25	Calculated by ENVIRON from vapor pressure(VP), solubility(S), and mol. weight of the Aroclor as described in reference 34, page 5-2). The VP and S for that Aroclor were taken from Reference 34.
26	ENVIRON used Aroclor-1016 [CASRN 12674-11-2] value presented in reference 34 as a surrogate.
28	ENVIRON used trans-1,2-Dichloroethene [CASRN 156-60-5] value presented in reference 34 as a surrogate.
43	pH associate with values is 6.8
44	ENVIRON used Chlordane [CASRN 57-74-9] value presented in reference 44 as a surrogate.
45	ENVIRON used Chromium VI [CASRN 18540-29-9] presented in reference 44 as a surrogate.
46	ENVIRON used Equation (70) from Reference 1 to calculate a value using log Kow=4.07 presented in Reference 44.
47	ENVIRON estimated value for (total) by averaging values for (m-, o-, and p-) isomers.
48	ENVIRON used Equation (5.8) from Reference 43 to calculate the Kp.
49	ENVIRON estimated value for m,p- by averaging values for (m-, and p-) isomers.
50	ENVIRON estimated value by averaging values for chemical group.
51	ENVIRON used Xylenes (total) [CASRN 1330-20-7] presented in reference 1 as a surrogate.
52	ENVIRON used trans-1,2-Dichloroethene [CASRN 156-60-5] presented in reference 1 as a surrogate.
53	ENVIRON limited Kp values greater than 1 to 1, based on USEPA guidance in reference 43

TABLE B-1 (continued)

References for Physical/Chemical Parameter Values
ACS NPL Site, Griffith, IN

REF	REFERENCE
1	USEPA. 1992. Handbook of RCRA Ground-Water Monitoring Constituents. Chemical and Physical Properties (40 CFR Part 264, Appendix IX). EPA-530-R-92-022. September.
34	USEPA. 1994. Technical Background for Soil Screening Guidance. Office of Emergency and Remedial Response. EPA/540/R-94/106. Review Draft. November.
35	Baes III, C.F., R.D. Sharp, A.L. Sjoreen, and R.W. Shor. 1984. A Review and Analysis of Parameters for Assessing Transport of Released Radionuclides through Agriculture (AD-89-T-2-A-106) (formerly EPA078-D-X0304), Oak Ridge National Laboratory, ORNL-5786.
43	USEPA. 1992. Dermal Exposure Assessment: Principles and Applications -- Interim Report. January 1992.
44	USEPA. 1996. Soil Screening Guidance: Technical Background Document. Office of Emergency and Remedial Response. EPA/540/R-95/128. May.
46	Lin et al. 1991. CRC Handbook of Chemistry and Physics.

Table B-2: Vapor Flux (mg/m^2-s per mg/kg) from Soil to Ambient Air

Analyte Group	Substance	CASRN	K_{oc} (L/kg)	K_d (L/kg)	H (unitless)	R_L (unitless)	D_{air} (cm^2/s)	D_Q (cm^2/s)	D_{water} (cm^2/s)	D_L (cm^2/s)	D_E (cm^2/s)	Chronic - 6 yr Areas 1 & 4B $J_{V\,(60\,cm)}$ (kg-soil/m^2-s)	Chronic - 6 yr Areas 2 & 3 $J_{V\,(300\,cm)}$ (kg-soil/m^2-s)	9 month $J_{V,\,Con}$ (kg-soil/m^2-s)	10-day $J_{V,\,Exc}$ (kg-soil/m^2-s)	8-hr $J_{V,\,8\text{-}hr}$ (kg-soil/m^2-s)	1-hr $J_{V,\,1\text{-}hr}$ (kg-soil/m^2-s)
VOC	1,1,1-Trichloroethane	71-55-6	1.10E+02	8.80E-01	7.05E-01	1.90E+00	7.80E-02	1.32E-03	8.80E-06	1.88E-07	4.90E-04	2.65E-06	1.22E-05	9.65E-05	5.05E-04	2.77E-03	7.82E-03
VOC	1,1,2,2-Tetrachloroethane	79-34-5	9.33E+01	7.46E-01	1.41E-02	1.56E+00	7.10E-02	1.20E-03	7.90E-06	1.68E-07	1.10E-05	2.33E-06	5.12E-06	1.45E-05	7.57E-05	4.15E-04	1.17E-03
VOC	1,1,2-Trichloroethane	79-00-5	5.01E+01	4.01E-01	3.74E-02	9.09E-01	7.80E-02	1.32E-03	8.80E-06	1.88E-07	5.46E-05	2.59E-06	8.77E-06	3.22E-05	1.69E-04	9.24E-04	2.61E-03
VOC	1,1-Dichloroethane	75-34-3	3.16E+01	2.53E-01	2.30E-01	6.57E-01	7.42E-02	1.26E-03	1.05E-05	2.24E-07	4.40E-04	2.65E-06	1.20E-05	9.15E-05	4.79E-04	2.62E-03	7.42E-03
VOC	1,1-Dichloroethene	75-35-4	5.89E+01	4.71E-01	1.07E+00	1.19E+00	9.00E-02	1.52E-03	1.04E-05	2.22E-07	1.38E-03	2.58E-06	1.30E-05	1.62E-04	8.47E-04	4.64E-03	1.31E-02
VOC	1,2,4-Trimethylbenzene	95-63-6			5.63E-03	1.51E-01	8.46E-02	1.43E-03	9.18E-06	1.96E-07	5.49E-05	1.50E-06	6.35E-06	3.23E-05	1.69E-04	9.26E-04	2.62E-03
VOC	1,2-Dichloroethane	107-06-2	1.74E+01	1.39E-01	4.01E-02	4.17E-01	1.04E-01	1.76E-03	9.90E-06	2.11E-07	1.70E-04	2.01E-06	8.74E-06	5.68E-05	2.97E-04	1.63E-03	4.61E-03
VOC	1,2-Dichloroethene (total)	540-59-0	5.00E+01	4.00E-01	2.30E-01	9.34E-01	7.07E-02	1.20E-03	9.18E-06	1.96E-07	2.95E-04	3.35E-06	1.39E-05	7.49E-05	3.92E-04	2.15E-03	6.07E-03
VOC	1,2-Dichloropropane	78-87-5	4.37E+01	3.50E-01	1.15E-01	8.23E-01	7.82E-02	1.32E-03	8.73E-06	1.86E-07	1.85E-04	7.50E-06	2.10E-05	5.94E-05	3.11E-04	1.70E-03	4.81E-03
VOC	1,3,5-Trimethylbenzene	108-67-8				1.50E-01	8.46E-02	1.43E-03	9.18E-06	1.96E-07	1.30E-06						
VOC	2-Butanone	78-93-3			1.90E-03	1.50E-01	8.46E-02	1.43E-03	9.18E-06	1.96E-07	1.95E-05	3.58E-06	6.81E-06	1.92E-05	1.01E-04	5.52E-04	1.56E-03
VOC	2-Hexanone	591-78-6			7.15E-02	1.60E-01	8.46E-02	1.43E-03	9.18E-06	1.96E-07	6.42E-04	1.30E-05	3.91E-05	1.11E-04	5.78E-04	3.17E-03	8.96E-03
VOC	4-Methyl-2-pentanone	108-10-1			6.09E-04	1.50E-01	8.46E-02	1.43E-03	9.18E-06	1.96E-07	7.12E-06	3.96E-07	1.79E-06	1.16E-05	6.09E-05	3.34E-04	9.44E-04
VOC	Acetone	67-64-1	5.75E-01	4.60E-03	1.59E-03	1.59E-01	1.24E-01	2.10E-03	1.14E-05	2.43E-07	2.26E-05	2.59E-07	1.33E-06	2.07E-05	1.08E-04	5.94E-04	1.68E-03
VOC	Benzene	71-43-2	5.89E+01	4.71E-01	2.28E-01	1.07E+00	8.80E-02	1.49E-03	9.80E-06	2.09E-07	3.19E-04	1.98E-06	9.49E-06	7.79E-05	4.07E-04	2.23E-03	6.31E-03
VOC	Bromodichloromethane	75-27-4	5.50E+01	4.40E-01	2.12E-03	9.77E-01	8.46E-02	1.43E-03	9.18E-06	1.96E-07	3.31E-06	6.38E-07	2.16E-06	7.94E-06	4.15E-05	2.27E-04	6.43E-04
VOC	Carbon Disulfide	75-15-0	4.57E+01	3.66E-01	1.24E+00	1.01E+00	1.04E-01	1.76E-03	1.00E-05	2.13E-07	2.16E-03	2.54E-06	1.33E-05	2.03E-04	1.06E-03	5.81E-03	1.64E-02
VOC	Carbon Tetrachloride	56-23-5	1.74E+02	1.39E+00	1.25E+00	2.94E+00	7.80E-02	1.32E-03	8.80E-06	1.88E-07	5.62E-04	3.38E-06	1.52E-05	1.03E-04	5.41E-04	2.96E-03	8.38E-03
VOC	Chlorobenzene	108-90-7	2.19E+02	1.75E+00	1.52E-01	3.47E+00	7.30E-02	1.24E-03	8.70E-06	1.86E-07	5.43E-05	1.03E-05	1.14E-05	3.21E-05	1.68E-04	9.21E-04	2.61E-03
VOC	Chloroethane	75-00-3			2.83E-01	1.90E-01	8.46E-02	1.43E-03	9.18E-06	1.96E-07	2.14E-03	1.43E-05	5.10E-05	2.02E-04	1.06E-03	5.78E-03	1.64E-02
VOC	Chloroform	67-66-3	3.98E+01	3.18E-01	1.50E-01	7.70E-01	1.04E-01	1.76E-03	1.00E-05	2.13E-07	3.44E-04	2.31E-06	1.06E-05	8.09E-05	4.23E-04	2.32E-03	6.55E-03
VOC	Chloromethane	74-87-3				1.50E-01	8.46E-02	1.43E-03	9.18E-06	1.96E-07	1.30E-06						
VOC	Ethyl Benzene	100-41-4	3.63E+02	2.90E+00	3.23E-01	5.65E+00	7.50E-02	1.27E-03	7.80E-06	1.66E-07	7.26E-05	1.19E-06	5.48E-06	3.72E-05	1.94E-04	1.07E-03	3.01E-03
VOC	Methylene Chloride	75-09-2	1.17E+01	9.36E-02	8.98E-02	3.39E-01	1.01E-01	1.71E-03	1.17E-05	2.49E-07	4.55E-04	2.99E-05	3.29E-05	9.30E-05	4.87E-04	2.67E-03	7.54E-03
VOC	Styrene	100-42-5	7.76E+02	6.21E+00	1.13E-01	1.18E+01	7.10E-02	1.20E-03	8.00E-06	1.71E-07	1.15E-05	7.69E-07	3.08E-06	1.48E-05	7.74E-05	4.24E-04	1.20E-03
VOC	Tetrachloroethene	127-18-4	1.55E+02	1.24E+00	7.54E-01	2.59E+00	7.20E-02	1.22E-03	8.20E-06	1.75E-07	3.56E-04	3.46E-06	1.45E-05	8.23E-05	4.30E-04	2.36E-03	6.67E-03
VOC	Tetrahydrofuran	109-99-9				1.50E-01	8.46E-02	1.43E-03	9.18E-06	1.96E-07	1.30E-06						
VOC	Toluene	108-88-3	1.82E+02	1.46E+00	2.72E-01	2.93E+00	8.70E-02	1.47E-03	8.60E-06	1.83E-07	1.37E-04	3.93E-06	1.39E-05	5.11E-05	2.67E-04	1.46E-03	4.14E-03
VOC	Trichloroethene	79-01-6	1.66E+02	1.33E+00	4.22E-01	2.71E+00	7.90E-02	1.34E-03	9.10E-06	1.94E-07	2.09E-04	2.23E-06	1.01E-05	6.30E-05	3.30E-04	1.81E-03	5.11E-03
VOC	Vinyl Chloride	75-01-4	1.86E+01	1.49E-01	1.11E+00	5.85E-01	1.06E-01	1.80E-03	1.23E-06	2.62E-08	3.41E-03	1.92E-05	6.92E-05	2.55E-04	1.33E-03	7.30E-03	2.06E-02
VOC	Xylenes (total)	1330-20-7	3.86E+02	3.09E+00	2.76E-01	5.99E+00	7.80E-02	1.32E-03	8.75E-06	1.87E-07	6.09E-05	2.73E-06	9.26E-06	3.40E-05	1.78E-04	9.75E-04	2.76E-03
VOC	cis-1,2-Dichloroethene	156-59-2	3.55E+01	2.84E-01	1.67E-01	7.07E-01	7.36E-02	1.25E-03	1.13E-05	2.41E-07	2.95E-04	2.10E-06	9.81E-06	7.49E-05	3.92E-04	2.15E-03	6.07E-03
VOC	m,p-xylene	36777-61-2	3.98E+02	3.18E+00	3.08E-01	6.18E+00	7.35E-02	1.24E-03	8.12E-06	1.73E-07	6.20E-05	1.10E-05	1.21E-05	3.43E-05	1.80E-04	9.84E-04	2.78E-03
VOC	ortho-xylene	95-47-6	3.63E+02	2.90E+00	2.13E-01	5.64E+00	8.70E-02	1.47E-03	1.00E-05	2.13E-07	5.57E-05	5.48E-06	1.15E-05	3.26E-05	1.70E-04	9.33E-04	2.64E-03
VOC	p-Cymene	99-87-6				1.50E-01	8.46E-02	1.43E-03	9.18E-06	1.96E-07	1.30E-06						
VOC	trans-1,2-Dichloroethene	156-60-5	5.25E+01	4.20E-01	3.85E-01	9.94E-01	7.07E-02	1.20E-03	1.19E-05	2.54E-07	4.64E-04	1.44E-05	3.32E-05	9.40E-05	4.92E-04	2.69E-03	7.62E-03
SVOC	1,2,4-Trichlorobenzene	120-82-1	1.78E+03	1.42E+01	5.82E-02	2.69E+01	3.00E-02	5.08E-04	8.23E-06	1.75E-07	1.10E-06	4.77E-07	1.47E-06	4.59E-06	2.40E-05	1.31E-04	3.72E-04
SVOC	1,2-Dichlorobenzene	95-50-1	6.17E+02	4.94E+00	7.79E-02	9.44E+00	6.90E-02	1.17E-03	7.90E-06	1.68E-07	9.66E-06	4.79E-06	4.79E-06	1.36E-05	7.09E-05	3.89E-04	1.10E-03
SVOC	1,3-Dichlorobenzene	541-73-1			1.32E-01	1.69E-01	4.68E-02	7.94E-04	7.04E-06	1.50E-07	6.25E-04	3.85E-05	3.85E-05	1.09E-04	5.70E-04	3.12E-03	8.84E-03
SVOC	1,4-Dichlorobenzene	106-46-7	6.17E+02	4.94E+00	9.96E-02	9.44E+00	6.90E-02	1.17E-03	7.90E-06	1.68E-07	1.23E-05	5.42E-06	5.42E-06	1.53E-05	8.02E-05	4.39E-04	1.24E-03
SVOC	2,2'-oxybis(1-Chloropropane)	108-60-1			4.50E-03	1.51E-01	6.02E-02	1.02E-03	7.04E-06	1.50E-07	3.14E-05	8.65E-06	8.65E-06	2.45E-05	1.28E-04	7.01E-04	1.98E-03
SVOC	2,4,5-Trichlorophenol	95-95-4	1.60E+03	1.28E+01	1.78E-04	2.42E+01	2.91E-02	4.93E-04	7.03E-06	1.50E-07	9.81E-09	1.53E-07	1.53E-07	4.32E-07	2.26E-06	1.24E-05	3.50E-05
SVOC	2,4-Dichlorophenol	120-83-2	1.47E+02	1.18E+00	1.30E-04	2.36E+00	3.46E-02	5.86E-04	8.77E-06	1.87E-07	1.11E-07	5.15E-07	5.15E-07	1.46E-06	7.62E-06	4.17E-05	1.18E-04
SVOC	2,4-Dimethylphenol	105-67-9	2.09E+02	1.67E+00	8.20E-05	3.29E+00	5.84E-02	9.89E-04	8.69E-06	1.85E-07	8.09E-08	6.55E-08	2.58E-07	1.24E-06	6.49E-06	3.56E-05	1.01E-04
SVOC	2,4-Dinitrotoluene	121-14-2	9.55E+01	7.64E-01	3.80E-06	1.59E+00	2.03E-01	3.44E-03	7.06E-06	1.51E-07	1.03E-07	3.81E-07	4.95E-07	1.40E-06	7.33E-06	4.01E-05	1.14E-04
SVOC	2,6-Dinitrotoluene	606-20-2	6.92E+01	5.54E-01	3.06E-05	1.19E+00	3.27E-02	5.54E-04	7.26E-06	1.55E-07	1.44E-07	9.76E-08	3.90E-07	1.66E-06	8.67E-06	4.75E-05	1.34E-04
SVOC	2-Chloronaphthalene	91-58-7			2.50E-02	1.54E-01	4.68E-02	7.94E-04	7.04E-06	1.50E-07	1.30E-04	1.76E-05	1.76E-05	4.98E-05	2.61E-04	1.43E-03	4.04E-03
SVOC	2-Methylnaphthalene	91-57-6			2.04E-02	1.53E-01	4.68E-02	7.94E-04	7.04E-06	1.50E-07	1.07E-04	4.56E-06	1.33E-05	4.51E-05	2.36E-04	1.29E-03	3.66E-03
SVOC	2-Methylphenol	95-48-7	9.12E+01	7.30E-01	4.92E-05	1.52E+00	7.40E-02	1.25E-03	8.30E-06	1.77E-07	1.57E-07	6.11E-07	6.11E-07	1.73E-06	9.04E-06	4.95E-05	1.40E-04
SVOC	3,3'-Dichlorobenzidine	91-94-1	7.24E+02	5.79E+00	1.64E-07	1.10E+01	1.94E-02	3.29E-04	6.74E-06	1.44E-07	1.30E-08						
SVOC	4-Bromophenyl-phenylether	101-55-3			4.09E-03	1.51E-01	4.68E-02	7.94E-04	7.04E-06	1.50E-07	2.25E-05						
SVOC	4-Chloro-3-methylphenol	59-50-7			1.02E-04	1.50E-01	4.68E-02	7.94E-04	7.04E-06	1.50E-07	1.54E-06	4.67E-07	1.60E-06	5.41E-06	2.83E-05	1.55E-04	4.39E-04
SVOC	4-Chlorophenyl-phenyl ether	7005-72-3			8.99E-03	1.51E-01	4.68E-02	7.94E-04	7.04E-06	1.50E-07	4.82E-05						
SVOC	4-Methylphenol	106-44-5			1.60E-05	1.50E-01	4.68E-02	7.94E-04	7.04E-06	1.50E-07	1.09E-06	8.46E-07	1.61E-06	4.54E-06	2.38E-05	1.30E-04	3.68E-04
SVOC	4-Nitrophenol	100-02-7			1.23E-03	1.50E-01	4.68E-02	7.94E-04	7.04E-06	1.50E-07	7.48E-06	4.22E-06	4.22E-06	1.19E-05	6.24E-05	3.42E-04	9.67E-04
SVOC	Acenaphthene	83-32-9	7.08E+03	5.66E+01	6.36E-03	1.07E+02	4.21E-02	7.13E-04	7.69E-06	1.64E-07	4.41E-08	3.24E-07	3.24E-07	9.16E-07	4.79E-06	2.62E-05	7.42E-05
SVOC	Acenaphthylene	208-96-8	1.00E+04	8.00E+01	4.66E-03	1.51E+02	4.68E-02	7.94E-04	7.04E-06	1.50E-07	2.56E-08	2.47E-07	2.47E-07	6.97E-07	3.65E-06	2.00E-05	5.65E-05
SVOC	Anthracene	120-12-7	2.95E+04	2.36E+02	2.67E-03	4.44E+02	3.24E-02	5.49E-04	7.74E-06	1.65E-07	3.67E-09	9.35E-08	9.35E-08	2.64E-07	1.38E-06	7.58E-06	2.14E-05
SVOC	Benzo(a)anthracene	56-55-3	3.98E+05	3.18E+03	1.37E-04	5.99E+03	5.10E-02	8.64E-04	9.00E-06	1.92E-07	5.18E-11						
SVOC	Benzo(a)pyrene	50-32-8	1.02E+06	8.16E+03	4.63E-05	1.53E+04	4.30E-02	7.29E-04	9.00E-06	1.92E-07	1.47E-11						
SVOC	Benzo(b)fluoranthene	205-99-2	1.23E+06	9.84E+03	4.55E-03	1.85E+04	2.26E-02	3.83E-04	5.56E-06	1.19E-07	1.01E-10						
SVOC	Benzo(g,h,i)perylene	191-24-2			5.72E-06	1.50E-01	4.68E-02	7.94E-04	7.04E-06	1.50E-07	1.03E-06						
SVOC	Benzo(k)fluoranthene	207-08-9	1.23E+06	9.84E+03	3.40E-05	1.85E+04	2.26E-02	3.83E-04	5.56E-06	1.19E-07	7.11E-12						
SVOC	Benzoic Acid	65-85-0	6.00E-01	4.80E-03	6.31E-05	1.59E-01	5.36E-02	9.08E-04	7.97E-06	1.70E-07	1.43E-06	1.68E-06	1.84E-06	5.21E-06	2.73E-05	1.49E-04	4.23E-04
SVOC	Benzyl Alcohol	100-51-6				1.50E-01	4.68E-02	7.94E-04	7.04E-06	1.50E-07	1.00E-06						
SVOC	Butylbenzylphthalate	85-68-7	5.75E+04	4.60E+02	5.17E-05	8.65E+02	1.74E-02	2.95E-04	4.83E-06	1.03E-07	1.37E-10						
SVOC	Carbazole	86-74-8	3.39E+03	2.71E+01		5.11E+01	4.68E-02	7.94E-04	7.04E-06	1.50E-07	2.93E-09						
SVOC	Chrysene	218-01-9	3.98E+05	3.18E+03	3.88E-03	5.99E+03	2.48E-02	4.20E-04	6.21E-06	1.32E-07	2.94E-10						
SVOC	Di-n-butylphthalate	84-74-2	3.39E+04	2.71E+02	3.85E-08	5.10E+02	4.38E-02	7.42E-04	7.86E-06	1.68E-07	3.29E-10						
SVOC	Di-n-octylphthalate	117-84-0	8.32E+07	6.66E+05	2.74E-03	1.25E+06	1.51E-02	2.56E-04	3.58E-06	7.63E-08	6.21E-13						
SVOC	Dibenzo(a,h)anthracene	53-70-3	3.80E+06	3.04E+04	6.03E-07	5.72E+04	2.02E-02	3.42E-04	5.18E-06	1.10E-07	1.94E-12						
SVOC	Dibenzofuran	132-64-9				1.50E-01	4.68E-02	7.94E-04	7.04E-06	1.50E-07	1.00E-06						
SVOC	Diethylphthalate	84-66-2	2.88E+02	2.30E+00	1.85E-05	4.48E+00	2.56E-02	4.34E-04	6.35E-06	1.35E-07	3.20E-08						
SVOC	Dimethylphthalate	131-11-3				1.50E-01	4.68E-02	7.94E-04	7.04E-06	1.50E-07	1.00E-06						
SVOC	Fluoranthene	206-44-0	1.07E+05	8.56E+02	6.60E-04	1.61E+03	3.02E-02	5.12E-04	6.35E-06	1.35E-07	2.94E-10						
SVOC	Fluorene	86-73-7	1.38E+04	1.10E+02	2.61E-03	2.08E+02	3.63E-02	6.15E-04	7.88E-06	1.68E-07	8.54E-09	1.42E-07	1.42E-07	4.03E-07	2.11E-06	1.15E-05	3.27E-05
SVOC	Hexachlorobenzene	118-74-1	5.50E+04	4.40E+02	5.41E-02	8.27E+02	5.42E-02	9.18E-04	5.91E-06	1.26E-07	6.02E-08						
SVOC	Hexachlorobutadiene	87-68-3	5.37E+04	4.30E+02	3.34E-01	8.08E+02	5.61E-02	9.50E-04	6.16E-06	1.31E-07	3.93E-07						
SVOC	Indeno(1,2,3-cd)pyrene	193-39-5	3.47E+06	2.78E+04	6.56E-05	5.22E+04	1.90E-02	3.22E-04	5.66E-06	1.21E-07	2.72E-12						
SVOC	Isophorone	78-59-1	4.68E+01	3.74E-01	2.72E-04	8.54E-01	6.23E-02	1.06E-03	6.76E-06	1.44E-07	5.05E-07	1.10E-06	1.10E-06	3.10E-06	1.62E-05	8.88E-05	2.51E-04
SVOC	N-Nitroso-di-n-propylamine	621-64-7	2.40E+01	1.92E-01	9.23E-05	5.11E-01	5.45E-02	9.23E-04	8.17E-06	1.74E-07	5.08E-07	1.10E-06	1.10E-06	3.11E-06	1.63E-05	8.91E-05	2.52E-04
SVOC	N-Nitrosodiphenylamine	86-30-6	1.29E+03	1.03E+01	2.05E-04	1.96E+01	3.12E-02	5.29E-04	6.35E-06	1.35E-07	1.25E-08	1.72E-07	1.72E-07	4.87E-07	2.55E-06	1.40E-05	3.95E-05
SVOC	Naphthalene	91-20-3	2.00E+03	1.60E+01	1.98E-02	3.02E+01	5.90E-02	1.00E-03	7.50E-06	1.60E-07	6.60E-07	5.97E-07	1.25E-06	3.54E-06	1.85E-05	1.02E-04	2.87E-04
SVOC	Pentachlorophenol	87-86-5	5.92E+02	4.74E+00	1.00E-06	9.05E+00	5.60E-02	9.49E-04	6.10E-06	1.30E-07	1.45E-08						

Table B-2: Vapor Flux (mg/m^2-s per mg/kg) from Soil to Ambient Air

Analyte Group	Substance	CASRN	K_{oc} (L/kg)	K_d (L/kg)	H (unitless)	R_L (unitless)	D_{air} (cm^2/s)	D_G (cm^2/s)	D_{water} (cm^2/s)	D_L (cm^2/s)	D_E (cm^2/s)	Chronic - 6 yr Areas 1 & 4B $J_{v\ (60\ cm)}$ (kg-soil/m^2-s)	Chronic - 6 yr Areas 2 & 3 $J_{v\ (300\ cm)}$ (kg-soil/m^2-s)	9 month $J_{v,\ Con}$ (kg-soil/m^2-s)	10-day $J_{v,\ Exc}$ (kg-soil/m^2-s)	8-hr $J_{v,\ 8\text{-}hr}$ (kg-soil/m^2-s)	1-hr $J_{v,\ 1\text{-}hr}$ (kg-soil/m^2-s)
SVOC	Phenanthrene	85-01-8		1.61E-03	1.50E-01	4.68E-02	7.94E-04	7.04E-06	1.50E-07	9.49E-06	4.75E-06	4.75E-06	1.34E-05	7.03E-05	3.85E-04	1.09E-03
SVOC	Phenol	108-95-2	2.88E+01	2.30E-01	1.63E-05	5.83E-01	8.20E-02	1.39E-03	9.10E-06	1.94E-07	3.72E-07	8.55E-07	9.40E-07	2.66E-06	1.39E-05	7.62E-05	2.16E-04
SVOC	Pyrene	129-00-0	1.05E+05	8.40E+02	4.51E-04	1.58E+03	2.72E-02	4.61E-04	7.24E-06	1.54E-07	2.29E-10						
SVOC	bis(2-Chloroethyl) ether	111-44-4	1.55E+01	1.24E-01	7.38E-04	3.83E-01	6.92E-02	1.17E-03	7.53E-06	1.61E-07	2.68E-06	2.52E-06	2.52E-06	7.14E-06	3.73E-05	2.05E-04	5.78E-04
SVOC	bis(2-Ethylhexyl)phthalate	117-81-7	1.51E+07	1.21E+05	4.18E-06	2.27E+05	3.51E-02	5.95E-04	3.66E-06	7.80E-08	3.55E-13						
P/PCB	4,4'-DDD	72-54-8	1.00E+06	8.00E+03	1.64E-04	1.50E+04	1.69E-02	2.86E-04	4.76E-06	1.01E-07	9.87E-12						
P/PCB	4,4'-DDE	72-55-9	4.47E+06	3.58E+04	8.61E-04	6.72E+04	1.44E-02	2.44E-04	5.87E-06	1.25E-07	4.99E-12						
P/PCB	4,4'-DDT	50-29-3	2.63E+06	2.10E+04	3.32E-04	3.96E+04	1.37E-02	2.32E-04	4.95E-06	1.06E-07	4.62E-12						
P/PCB	Aldrin	309-00-2	2.45E+06	1.96E+04	6.97E-03	3.68E+04	1.32E-02	2.24E-04	4.86E-06	1.04E-07	4.51E-11						
P/PCB	Aroclor-1242	53469-21-9	4.81E+04	3.85E+02	4.30E-02	7.24E+02	2.05E-02	3.47E-04	5.60E-06	1.19E-07	2.08E-08						
P/PCB	Aroclor-1248	12672-29-6			1.15E-01	1.66E-01	1.42E-02	2.40E-04	5.60E-06	1.19E-07	1.67E-04						
P/PCB	Aroclor-1254	11097-69-1	8.10E+05	6.48E+03	3.02E-02	1.22E+04	1.27E-02	2.15E-04	5.60E-06	1.19E-07	5.43E-10						
P/PCB	Aroclor-1260	11096-82-5	4.43E+06	3.54E+04	7.50E-03	6.66E+04	1.27E-02	2.15E-04	5.60E-06	1.19E-07	2.60E-11						
P/PCB	Dieldrin	60-57-1	2.14E+04	1.71E+02	5.84E-05	3.22E+02	1.42E-02	2.40E-04	5.60E-06	1.19E-07	4.14E-10						
P/PCB	Endosulfan I	959-98-8			4.13E-03	1.51E-01	1.42E-02	2.40E-04	5.60E-06	1.19E-07	7.38E-06						
P/PCB	Endosulfan sulfate	1031-07-8				1.50E-01	1.42E-02	2.40E-04	5.60E-06	1.19E-07	7.96E-07						
P/PCB	Endrin	72-20-8	1.23E+04	9.84E+01	4.00E-07	1.85E+02	1.42E-02	2.40E-04	5.60E-06	1.19E-07	6.45E-10						
P/PCB	Endrin aldehyde	7421-93-4	6.70E+02	5.36E+00	3.86E-07	1.02E+01	1.42E-02	2.40E-04	5.60E-06	1.19E-07	1.17E-08						
P/PCB	Endrin ketone	53494-70-5				1.50E-01	1.42E-02	2.40E-04	5.60E-06	1.19E-07	7.96E-07						
P/PCB	Heptachlor	76-44-8	1.41E+06	1.13E+04	4.47E-02	2.12E+04	1.12E-02	1.90E-04	5.69E-06	1.21E-07	4.06E-10						
P/PCB	Heptachlor epoxide	1024-57-3	8.32E+04	6.66E+02	3.90E-04	1.25E+03	1.32E-02	2.24E-04	4.23E-06	9.02E-08	1.42E-10						
P/PCB	Methoxychlor	72-43-5	9.77E+04	7.82E+02	6.48E-04	1.47E+03	1.56E-02	2.64E-04	4.46E-06	9.51E-08	1.81E-10						
P/PCB	alpha-BHC	319-84-6	1.23E+03	9.84E+00	4.35E-04	1.86E+01	1.42E-02	2.41E-04	7.34E-06	1.57E-07	1.40E-08						
P/PCB	alpha-Chlordane	5103-71-9	5.13E+04	4.10E+02	2.70E-03	7.72E+02	1.18E-02	2.00E-04	4.73E-06	1.01E-07	8.30E-10						
P/PCB	beta-BHC	319-85-7	1.26E+03	1.01E+01	3.05E-05	1.91E+01	1.42E-02	2.41E-04	7.34E-06	1.57E-07	8.58E-09						
P/PCB	gamma-BHC	58-89-9	1.07E+03	8.56E+00	5.74E-04	1.62E+01	1.42E-02	2.41E-04	7.34E-06	1.57E-07	1.81E-08						
P/PCB	gamma-Chlordane	5103-74-2	5.13E+04	4.10E+02	2.70E-03	7.72E+02	1.18E-02	2.00E-04	4.73E-06	1.01E-07	8.30E-10						
INORG	Antimony	7440-36-0		4.50E+01		8.48E+01	3.07E-02	5.20E-04	6.30E-06	1.34E-07	1.59E-09						
INORG	Arsenic	7440-38-2		2.90E+01		5.47E+01	3.07E-02	5.20E-04	6.30E-06	1.34E-07	2.46E-09						
INORG	Barium	7440-39-3		4.10E+01		7.72E+01	3.07E-02	5.20E-04	6.30E-06	1.34E-07	1.74E-09						
INORG	Beryllium	7440-41-7		7.90E+02		1.49E+03	3.07E-02	5.20E-04	6.30E-06	1.34E-07	9.04E-11						
INORG	Cadmium	7440-43-9		7.50E+01		1.41E+02	3.07E-02	5.20E-04	6.30E-06	1.34E-07	9.52E-10						
INORG	Chromium 3+	16065-83-1		1.90E+01		3.59E+01	3.07E-02	5.20E-04	6.30E-06	1.34E-07	3.74E-09						
INORG	Chromium 6+	18540-29-9		1.90E+01		3.59E+01	3.07E-02	5.20E-04	6.30E-06	1.34E-07	3.74E-09						
INORG	Cobalt	7440-48-4		4.50E+01		8.48E+01	3.07E-02	5.20E-04	6.30E-06	1.34E-07	1.59E-09						
INORG	Copper	7440-50-8		1.00E+04		1.88E+04	3.07E-02	5.20E-04	6.30E-06	1.34E-07	7.15E-12						
INORG	Cyanide (total)	57-12-5		9.90E+00		1.88E+01	3.07E-02	5.20E-04	6.30E-06	1.34E-07	7.16E-09						
INORG	Lead	7439-92-1		9.00E+02		1.69E+03	3.07E-02	5.20E-04	6.30E-06	1.34E-07	7.94E-11						
INORG	Manganese	7439-96-5		6.50E+01		1.22E+02	3.07E-02	5.20E-04	6.30E-06	1.34E-07	1.10E-09						
INORG	Mercury	7439-97-6		5.20E+01	4.67E-01	9.80E+01	3.07E-02	5.20E-04	6.30E-06	1.34E-07	2.48E-06						
INORG	Nickel	7440-02-0		6.50E+01		1.22E+02	3.07E-02	5.20E-04	6.30E-06	1.34E-07	1.10E-09						
INORG	Selenium	7782-49-2		5.00E+00		9.55E+00	3.07E-02	5.20E-04	6.30E-06	1.34E-07	1.41E-08						
INORG	Silver	7440-22-4		8.30E+00		1.58E+01	3.07E-02	5.20E-04	3.30E-06	1.34E-07	8.53E-09						
INORG	Thallium	7440-28-0		7.10E+01		1.34E+02	3.07E-02	5.20E-04	6.30E-06	1.34E-07	1.01E-09						
INORG	Vanadium	7440-62-2		1.00E+03		1.88E+03	3.07E-02	5.20E-04	6.30E-06	1.34E-07	7.14E-11						
INORG	Zinc	7440-66-6		6.20E+01		1.17E+02	3.07E-02	5.20E-04	6.30E-06	1.34E-07	1.15E-09						
TIC	Acetaldehyde	75-07-0				1.50E-01											
TIC	Acetophenone	98-86-2				1.50E-01											
TIC	Azobenzene	103-33-3				1.50E-01											
TIC	Butanol, 1-	71-36-3	6.92E+00	5.54E-02	3.61E-04	2.54E-01	8.00E-02	1.36E-03	9.30E-06	1.98E-07	2.71E-06	2.54E-06	2.54E-06	7.17E-06	3.75E-05	2.06E-04	5.82E-04
TIC	Caprolactam	105-60-2				1.50E-01											
TIC	Chlorodifluoromethane	75-45-6				1.50E-01											
TIC	Cyclohexanone	108-94-1				1.50E-01											
TIC	Diethyl ether	60-29-7				1.50E-01											
TIC	Dioxane, 1,4-	123-91-1				1.50E-01											
TIC	Ethanol, 2-(2-butoxyethoxy)-	112-34-5				1.50E-01											
TIC	Hexane, n-	110-54-3				1.50E-01											
TIC	Phenol, 4,4'-(1-methylethyliden	80-05-7				1.50E-01											
TIC	Phthalic anhydride	85-44-9				1.50E-01											

Notes:	Soil bulk density	g/cm^3	ρ_b	1.88	Calculated based on relationship to soil particle density and soil porosity
	Soil particle density	g/cm^3	ρ_s	2.65	SSG default
	Soil porosity	L/L-soil	n	**0.29**	Based on average of porosity values in RI report.
	Water-filled soil porosity	L/L-soil	θ_w	0.15	SSG default
	Air-filled soil porosity	L/L-soil	θ_a	0.14	Calculated
	Organic carbon fraction	unitless	f_{oc}	**0.008**	Calculated from average of TOC values in RI report
	Exposure Interval, Chronic	sec	T	1.89E+08	6 years (based on shortest of the chronic EDs - child)
	Exposure Interval, Construction	sec	T	2.37E+07	9 months
	Exposure Interval, Excavation	sec	T	8.64E+05	10 days
	Exposure Interval, 8-hr	sec	T	2.88E+04	
	Exposure Interval, 1-hr	sec	T	3.60E+03	

Table B-3: Vapor Flux (L/m^2-s per mg/L) from Exposed Water to Ambient Air

Analyte Group	Substance	CASRN	H (unitless)	MW g/mol	K_{Gi} cm/s	K_{li} cm/s	$1/K_L$ cm/s	K_L cm/s	J_L (L/m^2-s)
VOC	1,1,1-Trichloroethane	71-55-6	7.05E-01	133.4	4.04E-01	9.30E-04	1.08E+03	9.27E-04	9.27E-03
VOC	1,1,2,2-Tetrachloroethane	79-34-5	1.41E-02	167.85	3.74E-01	8.29E-04	1.40E+03	7.17E-04	7.17E-03
VOC	1,1,2-Trichloroethane	79-00-5	3.74E-02	133.4	4.04E-01	9.30E-04	1.14E+03	8.76E-04	8.76E-03
VOC	1,1-Dichloroethane	75-34-3	2.30E-01	98.96	4.47E-01	1.08E-03	9.36E+02	1.07E-03	1.07E-02
VOC	1,1-Dichloroethene	75-35-4	1.07E+00	96.94	4.50E-01	1.09E-03	9.18E+02	1.09E-03	1.09E-02
VOC	1,2,4-Trimethylbenzene	95-63-6	5.63E-03						
VOC	1,2-Dichloroethane	107-06-2	4.01E-02	98.96	4.47E-01	1.08E-03	981.6904	1.02E-03	1.02E-02
VOC	1,2-Dichloroethene (total)	540-59-0	2.30E-01	96.94	4.50E-01	1.09E-03	9.26E+02	1.08E-03	1.08E-02
VOC	1,2-Dichloropropane	78-87-5	1.15E-01	112.99	4.27E-01	1.01E-03	1.01E+03	9.90E-04	9.90E-03
VOC	1,3,5-Trimethylbenzene	108-67-8							
VOC	2-Butanone	78-93-3	1.90E-03	72.11	4.97E-01	1.27E-03	1.85E+03	5.41E-04	5.41E-03
VOC	2-Hexanone	591-78-6	7.15E-02	100.16	4.45E-01	1.07E-03	9.63E+02	1.04E-03	1.04E-02
VOC	4-Methyl-2-pentanone	108-10-1	6.09E-04	100.16	4.45E-01	1.07E-03	4.62E+03	2.16E-04	2.16E-03
VOC	Acetone	67-64-1	1.59E-03	58.08	5.34E-01	1.41E-03	1.89E+03	5.30E-04	5.30E-03
VOC	Benzene	71-43-2	2.28E-01	78.11	4.84E-01	1.22E-03	8.32E+02	1.20E-03	1.20E-02
VOC	Bromodichloromethane	75-27-4	2.12E-03	163.8	3.77E-01	8.39E-04	2.44E+03	4.10E-04	4.10E-03
VOC	Carbon Disulfide	75-15-0	1.24E+00	76.13	4.88E-01	1.23E-03	8.14E+02	1.23E-03	1.23E-02
VOC	Carbon Tetrachloride	56-23-5	1.25E+00	153.82	3.85E-01	8.66E-04	1.16E+03	8.65E-04	8.65E-03
VOC	Chlorobenzene	108-90-7	1.52E-01	112.56	4.28E-01	1.01E-03	1002.827	9.97E-04	0.009972
VOC	Chloroethane	75-00-3	2.83E-01	64.51	5.16E-01	1.34E-03	7.54E+02	1.33E-03	1.33E-02
VOC	Chloroform	67-66-3	1.50E-01	119.38	4.20E-01	9.83E-04	1.03E+03	9.68E-04	9.68E-03
VOC	Chloromethane	74-87-3		50.49	5.60E-01	1.51E-03			
VOC	Ethyl Benzene	100-41-4	3.23E-01	106.17	4.36E-01	1.04E-03	9.66E+02	1.04E-03	1.04E-02
VOC	Methylene Chloride	75-09-2	8.98E-02	84.93	4.70E-01	1.17E-03	881.4172	1.13E-03	0.011345
VOC	Styrene	100-42-5	1.13E-01	104.15	4.39E-01	1.05E-03	9.70E+02	1.03E-03	1.03E-02
VOC	Tetrachloroethene	127-18-4	7.54E-01	165.83	3.76E-01	8.34E-04	1.20E+03	8.32E-04	8.32E-03
VOC	Tetrahydrofuran	109-99-9							
VOC	Toluene	108-88-3	2.72E-01	92.14	4.58E-01	1.12E-03	9.01E+02	1.11E-03	1.11E-02
VOC	Trichloroethene	79-01-6	4.22E-01	131.39	4.06E-01	9.37E-04	1.07E+03	9.32E-04	9.32E-03
VOC	Vinyl Chloride	75-01-4	1.11E+00	62.5	5.21E-01	1.36E-03	737.5371	1.36E-03	1.36E-02
VOC	Xylenes (total)	1330-20-7	2.76E-01	106.17	4.36E-01	1.04E-03	967.3178	1.03E-03	1.03E-02
VOC	cis-1,2-Dichloroethene	156-59-2	1.67E-01	96.94	4.50E-01	1.09E-03	9.30E+02	1.08E-03	1.08E-02
VOC	m,p-xylene	36777-61-2	3.08E-01	106.17	4.36E-01	1.04E-03	9.66E+02	1.03E-03	1.03E-02
VOC	ortho-xylene	95-47-6	2.13E-01	106.17	4.36E-01	1.04E-03	9.70E+02	1.03E-03	1.03E-02
VOC	p-Cymene	99-87-6							
VOC	trans-1,2-Dichloroethene	156-60-5	3.85E-01	96.94	4.50E-01	1.09E-03	9.22E+02	1.08E-03	1.08E-02
SVOC	1,2,4-Trichlorobenzene	120-82-1	5.82E-02	181.45	3.65E-01	7.98E-04	1.30E+03	7.69E-04	7.69E-03
SVOC	1,2-Dichlorobenzene	95-50-1	7.79E-02	147	3.91E-01	8.86E-04	1.16E+03	8.61E-04	8.61E-03
SVOC	1,3-Dichlorobenzene	541-73-1	1.32E-01	147	3.91E-01	8.86E-04	1.15E+03	8.71E-04	8.71E-03
SVOC	1,4-Dichlorobenzene	106-46-7	9.96E-02	147	3.91E-01	8.86E-04	1.15E+03	8.66E-04	8.66E-03
SVOC	2,2'-oxybis(1-Chloropropane	108-60-1	4.50E-03	171.07	3.72E-01	8.21E-04	1.82E+03	5.51E-04	5.51E-03
SVOC	2,4,5-Trichlorophenol	95-95-4	1.78E-04	197.45	3.55E-01	7.65E-04	1.72E+04	5.83E-05	5.83E-04
SVOC	2,4-Dichlorophenol	120-83-2	1.30E-04	163	3.78E-01	8.42E-04	2.15E+04	4.64E-05	4.64E-04
SVOC	2,4-Dimethylphenol	105-67-9	8.20E-05	122.17	4.16E-01	9.72E-04	3.03E+04	3.30E-05	3.30E-04
SVOC	2,4-Dinitrotoluene	121-14-2	3.80E-06	182.14	3.64E-01	7.96E-04	7.24E+05	1.38E-06	1.38E-05
SVOC	2,6-Dinitrotoluene	606-20-2	3.06E-05	182.14	3.64E-01	7.96E-04	9.10E+04	1.10E-05	1.10E-04
SVOC	2-Chloronaphthalene	91-58-7	2.50E-02	162.62	3.78E-01	8.43E-04	1.29E+03	7.74E-04	7.74E-03
SVOC	2-Methylnaphthalene	91-57-6	2.04E-02	142.2	3.96E-01	9.01E-04	1.23E+03	8.11E-04	8.11E-03
SVOC	2-Methylphenol	95-48-7	4.92E-05	108.14	4.34E-01	1.03E-03	4.78E+04	2.09E-05	2.09E-04
SVOC	3,3'-Dichlorobenzidine	91-94-1	1.64E-07	253.13	3.26E-01	6.75E-04	1.87E+07	5.35E-08	
SVOC	4-Bromophenyl-phenylether	101-55-3	4.09E-03	249.11	3.28E-01	6.81E-04	2.21E+03	4.51E-04	
SVOC	4-Chloro-3-methylphenol	59-50-7	1.02E-04	142.58	3.95E-01	9.00E-04	2.59E+04	3.87E-05	3.87E-04
SVOC	4-Chlorophenyl-phenyl ether	7005-72-3	8.99E-03	204.66	3.50E-01	7.51E-04	1.65E+03	6.06E-04	
SVOC	4-Methylphenol	106-44-5	1.60E-05	108.14	4.34E-01	1.03E-03	1.45E+05	6.90E-06	6.90E-05
SVOC	4-Nitrophenol	100-02-7	1.23E-03	139.11	3.99E-01	9.11E-04	3.14E+03	3.18E-04	3.18E-03
SVOC	Acenaphthene	83-32-9	6.36E-03	154.21	3.85E-01	8.65E-04	1.56E+03	6.39E-04	6.39E-03
SVOC	Acenaphthylene	208-96-8	4.66E-03	152.2	3.87E-01	8.71E-04	1.70E+03	5.87E-04	5.87E-03
SVOC	Anthracene	120-12-7	2.67E-03	178.23	3.67E-01	8.05E-04	2.26E+03	4.42E-04	4.42E-03
SVOC	Benzo(a)anthracene	56-55-3	1.37E-04	228.29	3.38E-01	7.11E-04	2.30E+04	4.34E-05	
SVOC	Benzo(a)pyrene	50-32-8	4.63E-05	252.32	3.27E-01	6.76E-04	6.76E+04	1.48E-05	
SVOC	Benzo(b)fluoranthene	205-99-2	4.55E-03	252.32	3.27E-01	6.76E-04	2.15E+03	4.65E-04	
SVOC	Benzo(g,h,i)perylene	191-24-2	5.72E-06	276.34	3.17E-01	6.46E-04	5.53E+05	1.81E-06	
SVOC	Benzo(k)fluoranthene	207-08-9	3.40E-05	252.32	3.27E-01	6.76E-04	91543.33	1.09E-05	
SVOC	Benzoic Acid	65-85-0	6.31E-05	122.12	4.16E-01	9.72E-04	39084.69	2.56E-05	0.000256
SVOC	Benzyl Alcohol	100-51-6		108.13	4.34E-01	1.03E-03			
SVOC	Butylbenzylphthalate	85-68-7	5.17E-05	312.4	3.04E-01	6.08E-04	6.53E+04	1.53E-05	
SVOC	Carbazole	86-74-8		167.21	3.75E-01	8.31E-04			
SVOC	Chrysene	218-01-9	3.88E-03	228.29	3.38E-01	7.11E-04	2.17E+03	4.61E-04	
SVOC	Di-n-butylphthalate	84-74-2	3.85E-08	278.35	3.16E-01	6.44E-04	8.22E+07	1.22E-08	
SVOC	Di-n-octylphthalate	117-84-0	2.74E-03	390.57	2.82E-01	5.44E-04	3133.139	3.19E-04	
SVOC	Dibenzo(a,h)anthracene	53-70-3	6.03E-07	278.35	3.16E-01	6.44E-04	5.25E+06	1.90E-07	
SVOC	Dibenzofuran	132-64-9		168.19	3.74E-01	8.28E-04			
SVOC	Diethylphthalate	84-66-2	1.85E-05	222.24	3.41E-01	7.21E-04	1.60E+05	6.25E-06	
SVOC	Dimethylphthalate	131-11-3		194.19	3.57E-01	7.71E-04			
SVOC	Fluoranthene	206-44-0	6.60E-04	202.26	3.52E-01	7.55E-04	5.63E+03	1.78E-04	
SVOC	Fluorene	86-73-7	2.61E-03	166.22	3.76E-01	8.33E-04	2.22E+03	4.50E-04	4.50E-03
SVOC	Hexachlorobenzene	118-74-1	5.41E-02	284.78	3.14E-01	6.37E-04	1.63E+03	6.14E-04	
SVOC	Hexachlorobutadiene	87-68-3	3.34E-01	260.76	3.23E-01	6.65E-04	1.51E+03	6.61E-04	
SVOC	Indeno(1,2,3-cd)pyrene	193-39-5	6.56E-05	276.34	3.17E-01	6.46E-04	4.97E+04	2.01E-05	
SVOC	Isophorone	78-59-1	2.72E-04	138.21	4.00E-01	9.14E-04	1.03E+04	9.71E-05	9.71E-04
SVOC	N-Nitroso-di-n-propylamine	621-64-7	9.23E-05	130.19	4.08E-01	9.42E-04	2.76E+04	3.62E-05	3.62E-04
SVOC	N-Nitrosodiphenylamine	86-30-6	2.05E-04	198.23	3.54E-01	7.63E-04	1.51E+04	6.63E-05	6.63E-04

Table B-3: Vapor Flux (L/m^2-s per mg/L) from Exposed Water to Ambient Air

Analyte Group	Substance	CASRN	H (unitless)	MW g/mol	K_{GI} cm/s	K_{II} cm/s	$1/K_L$ cm/s	K_L cm/s	J_L (L/m^2-s)
SVOC	Naphthalene	91-20-3	1.98E-02	128.17	4.10E-01	9.49E-04	1.18E+03	8.50E-04	8.50E-03
SVOC	Pentachlorophenol	87-86-5	1.00E-06	266.34	3.21E-01	6.58E-04	3.12E+06	3.21E-07	
SVOC	Phenanthrene	85-01-8	1.61E-03	178.23	3.67E-01	8.05E-04	2.94E+03	3.40E-04	3.40E-03
SVOC	Phenol	108-95-2	1.63E-05	94.11	4.54E-01	1.11E-03	1.36E+05	7.36E-06	7.36E-05
SVOC	Pyrene	129-00-0	4.51E-04	202.26	3.52E-01	7.55E-04	7.63E+03	1.31E-04	
SVOC	bis(2-Chloroethyl) ether	111-44-4	7.38E-04	143.01	3.95E-01	8.98E-04	4.54E+03	2.20E-04	2.20E-03
SVOC	bis(2-Ethylhexyl)phthalate	117-81-7	4.18E-06	390.54	2.82E-01	5.44E-04	8.50E+05	1.18E-06	
P/PCB	4,4'-DDD	72-54-8	1.64E-04	320.05	3.02E-01	6.01E-04	2.19E+04	4.57E-05	
P/PCB	4,4'-DDE	72-55-9	8.61E-04	319.03	3.02E-01	6.02E-04	5.51E+03	1.81E-04	
P/PCB	4,4'-DDT	50-29-3	3.32E-04	354.49	2.91E-01	5.71E-04	1.21E+04	8.27E-05	
P/PCB	Aldrin	309-00-2	6.97E-03	364.91	2.89E-01	5.62E-04	2275.084	4.40E-04	
P/PCB	Aroclor-1242	53469-21-9	4.30E-02	266.5	3.21E-01	6.58E-04	1591.935	6.28E-04	
P/PCB	Aroclor-1248	12672-29-6	1.15E-01	299.5	3.08E-01	6.21E-04	1638.934	6.10E-04	
P/PCB	Aroclor-1254	11097-69-1	3.02E-02	328	2.99E-01	5.93E-04	1796.339	5.57E-04	
P/PCB	Aroclor-1260	11096-82-5	7.50E-03	375.7	2.86E-01	5.54E-04	2.27E+03	4.40E-04	
P/PCB	Dieldrin	60-57-1	5.84E-05	380.91	2.84E-01	5.51E-04	62009.13	1.61E-05	
P/PCB	Endosulfan I	959-98-8	4.13E-03	406.95	2.78E-01	5.33E-04	2.75E+03	3.64E-04	
P/PCB	Endosulfan sulfate	1031-07-8		422.92	2.75E-01	5.22E-04			
P/PCB	Endrin	72-20-8	4.00E-07	380.92	2.84E-01	5.51E-04	8.79E+06	1.14E-07	
P/PCB	Endrin aldehyde	7421-93-4	3.86E-07	380.92	2.84E-01	5.51E-04	9.11E+06	1.10E-07	
P/PCB	Endrin ketone	53494-70-5							
P/PCB	Heptachlor	76-44-8	4.47E-02	373.32	2.86E-01	5.56E-04	1.88E+03	5.33E-04	
P/PCB	Heptachlor epoxide	1024-57-3	3.90E-04	389.32	2.82E-01	5.45E-04	10916.09	9.16E-05	
P/PCB	Methoxychlor	72-43-5	6.48E-04	345.65	2.94E-01	5.78E-04	6981.47	1.43E-04	
P/PCB	alpha-BHC	319-84-6	4.35E-04	290.83	3.11E-01	6.30E-04	8969.868	1.11E-04	
P/PCB	alpha-Chlordane	5103-71-9	2.70E-03	409.8	2.78E-01	5.31E-04	3218.353	3.11E-04	
P/PCB	beta-BHC	319-85-7	3.05E-05	290.83	3.11E-01	6.30E-04	106880.4	9.36E-06	
P/PCB	gamma-BHC	58-89-9	5.74E-04	290.83	3.11E-01	6.30E-04	7182.09	1.39E-04	
P/PCB	gamma-Chlordane	5103-74-2	2.70E-03	409.8	2.78E-01	5.31E-04	3218.353	3.11E-04	
INORG	Antimony	7440-36-0		121.75	4.17E-01	9.74E-04			
INORG	Arsenic	7440-38-2		74.9216	4.90E-01	1.24E-03			
INORG	Barium	7440-39-3		137.33	4.00E-01	9.17E-04			
INORG	Beryllium	7440-41-7		9.01218	9.97E-01	3.58E-03			
INORG	Cadmium	7440-43-9		112.41	4.28E-01	1.01E-03			
INORG	Chromium 3+	16065-83-1		51.996	5.54E-01	1.49E-03			
INORG	Chromium 6+	18540-29-9		51.996	5.54E-01	1.49E-03			
INORG	Cobalt	7440-48-4		58.9332	5.32E-01	1.40E-03			
INORG	Copper	7440-50-8		63.546	5.18E-01	1.35E-03			
INORG	Cyanide (total)	57-12-5		26.0177	6.99E-01	2.11E-03			
INORG	Lead	7439-92-1		207.2	3.49E-01	7.46E-04			
INORG	Manganese	7439-96-5		54.93805	5.44E-01	1.45E-03			
INORG	Mercury	7439-97-6	4.67E-01	200.59	3.53E-01	7.59E-04	1324.267	7.55E-04	
INORG	Nickel	7440-02-0		58.69	5.32E-01	1.40E-03			
INORG	Selenium	7782-49-2		78.96	4.82E-01	1.21E-03			
INORG	Silver	7440-22-4		107.8682	4.34E-01	1.03E-03			
INORG	Thallium	7440-28-0		204.383	3.50E-01	7.52E-04			
INORG	Vanadium	7440-62-2		50.9415	5.58E-01	1.51E-03			
INORG	Zinc	7440-66-6		65.38	5.13E-01	1.33E-03			
TIC	Acetaldehyde	75-07-0		44.05	5.86E-01	1.62E-03			
TIC	Acetophenone	98-86-2		120.16	4.19E-01	9.80E-04			
TIC	Azobenzene	103-33-3		182.23	3.64E-01	7.96E-04			
TIC	Butanol, 1-	71-36-3	3.61E-04	74.12	4.92E-01	1.25E-03	6428.618	1.56E-04	0.001556
TIC	Caprolactam	105-60-2		113.16	4.27E-01	1.01E-03			
TIC	Chlorodifluoromethane	75-45-6		86.47	4.67E-01	1.16E-03			
TIC	Cyclohexanone	108-94-1		98.15	4.48E-01	1.08E-03			
TIC	Diethyl ether	60-29-7		74.12	4.92E-01	1.25E-03			
TIC	Dioxane, 1,4-	123-91-1		88.12	4.65E-01	1.14E-03			
TIC	Ethanol, 2-(2-butoxyethoxy)-	112-34-5		162.29	3.79E-01	8.43E-04			
TIC	Hexane, n-	110-54-3		86.18	4.68E-01	1.16E-03			
TIC	Phenol, 4,4'-(1-methylethylid	80-05-7		228.28	3.38E-01	7.11E-04			
TIC	Phthalic anhydride	85-44-9		148.12	3.90E-01	8.83E-04			
Notes:	molecular weight of oxygen	g/mol	MW_{02}	32					
	molecular weight of water	g/mol	MW_{H20}	18					
	absolute temperature	K	T	283					
	liquid-phase mass transfer coefficient for oxygen	cm/s	$k_{L,02}$	0.002					
	gas-phase mass transfer coefficient for water vapor at 25 C	cm/s	$K_{G,H20}$	0.833					

Table B-4: Vapor Flux (mg/m^2-s per mg/L) from Covered Ground Water to Ambient Air

Analyte Group	Substance	CASRN	H (unitless)	D_{air} (cm^2/s)	D_G (cm^2/s)	D_{water} (cm^2/s)	D_L (cm^2/s)	J_v (L/m^2-s)
VOC	1,1,1-Trichloroethane	71-55-6	7.05E-01	7.80E-02	1.32E-03	8.80E-06	1.69E-06	3.38E-07
VOC	1,1,2,2-Tetrachloroethane	79-34-5	1.41E-02	7.10E-02	1.20E-03	7.90E-06	1.52E-06	3.03E-07
VOC	1,1,2-Trichloroethane	79-00-5	3.74E-02	7.80E-02	1.32E-03	8.80E-06	1.69E-06	3.38E-07
VOC	1,1-Dichloroethane	75-34-3	2.30E-01	7.42E-02	1.26E-03	1.05E-05	2.02E-06	4.03E-07
VOC	1,1-Dichloroethene	75-35-4	1.07E+00	9.00E-02	1.52E-03	1.04E-05	2.00E-06	3.99E-07
VOC	1,2,4-Trimethylbenzene	95-63-6	5.63E-03	8.46E-02	1.43E-03	9.18E-06	1.76E-06	3.52E-07
VOC	1,2-Dichloroethane	107-06-2	4.01E-02	1.04E-01	1.76E-03	9.90E-06	1.90E-06	3.80E-07
VOC	1,2-Dichloroethene (total)	540-59-0	2.30E-01	7.07E-02	1.20E-03	9.18E-06	1.76E-06	3.52E-07
VOC	1,2-Dichloropropane	78-87-5	1.15E-01	7.82E-02	1.32E-03	8.73E-06	1.68E-06	3.35E-07
VOC	1,3,5-Trimethylbenzene	108-67-8		8.46E-02	1.43E-03	9.18E-06	1.76E-06	
VOC	2-Butanone	78-93-3	1.90E-03	8.46E-02	1.43E-03	9.18E-06	1.76E-06	3.52E-07
VOC	2-Hexanone	591-78-6	7.15E-02	8.46E-02	1.43E-03	9.18E-06	1.76E-06	3.52E-07
VOC	4-Methyl-2-pentanone	108-10-1	6.09E-04	8.46E-02	1.43E-03	9.18E-06	1.76E-06	3.52E-07
VOC	Acetone	67-64-1	1.59E-03	1.24E-01	2.10E-03	1.14E-05	2.19E-06	4.38E-07
VOC	Benzene	71-43-2	2.28E-01	8.80E-02	1.49E-03	9.80E-06	1.88E-06	3.76E-07
VOC	Bromodichloromethane	75-27-4	2.12E-03	8.46E-02	1.43E-03	9.18E-06	1.76E-06	3.52E-07
VOC	Carbon Disulfide	75-15-0	1.24E+00	1.04E-01	1.76E-03	1.00E-05	1.92E-06	3.84E-07
VOC	Carbon Tetrachloride	56-23-5	1.25E+00	7.80E-02	1.32E-03	8.80E-06	1.69E-06	3.38E-07
VOC	Chlorobenzene	108-90-7	1.52E-01	7.30E-02	1.24E-03	8.70E-06	1.67E-06	3.34E-07
VOC	Chloroethane	75-00-3	2.83E-01	8.46E-02	1.43E-03	9.18E-06	1.76E-06	3.52E-07
VOC	Chloroform	67-66-3	1.50E-01	1.04E-01	1.76E-03	1.00E-05	1.92E-06	3.84E-07
VOC	Chloromethane	74-87-3		8.46E-02	1.43E-03	9.18E-06	1.76E-06	
VOC	Ethyl Benzene	100-41-4	3.23E-01	7.50E-02	1.27E-03	7.80E-06	1.50E-06	2.99E-07
VOC	Methylene Chloride	75-09-2	8.98E-02	1.01E-01	1.71E-03	1.17E-05	2.25E-06	4.49E-07
VOC	Styrene	100-42-5	1.13E-01	7.10E-02	1.20E-03	8.00E-06	1.54E-06	3.07E-07
VOC	Tetrachloroethene	127-18-4	7.54E-01	7.20E-02	1.22E-03	8.20E-06	1.57E-06	3.15E-07
VOC	Tetrahydrofuran	109-99-9		8.46E-02	1.43E-03	9.18E-06	1.76E-06	
VOC	Toluene	108-88-3	2.72E-01	8.70E-02	1.47E-03	8.60E-06	1.65E-06	3.30E-07
VOC	Trichloroethene	79-01-6	4.22E-01	7.90E-02	1.34E-03	9.10E-06	1.75E-06	3.49E-07
VOC	Vinyl Chloride	75-01-4	1.11E+00	1.06E-01	1.80E-03	1.23E-06	2.36E-07	4.72E-08
VOC	Xylenes (total)	1330-20-7	2.76E-01	7.80E-02	1.32E-03	8.75E-06	1.68E-06	3.36E-07
VOC	cis-1,2-Dichloroethene	156-59-2	1.67E-01	7.36E-02	1.25E-03	1.13E-05	2.17E-06	4.34E-07
VOC	m,p-xylene	36777-61-2	3.08E-01	7.35E-02	1.24E-03	8.12E-06	1.56E-06	3.12E-07
VOC	ortho-xylene	95-47-6	2.13E-01	8.70E-02	1.47E-03	1.00E-05	1.92E-06	3.84E-07
VOC	p-Cymene	99-87-6		8.46E-02	1.43E-03	9.18E-06	1.76E-06	
VOC	trans-1,2-Dichloroethene	156-60-5	3.85E-01	7.07E-02	1.20E-03	1.19E-05	2.28E-06	4.57E-07
SVOC	1,2,4-Trichlorobenzene	120-82-1	5.82E-02	3.00E-02	5.08E-04	8.23E-06	1.58E-06	3.16E-07
SVOC	1,2-Dichlorobenzene	95-50-1	7.79E-02	6.90E-02	1.17E-03	7.90E-06	1.52E-06	3.03E-07
SVOC	1,3-Dichlorobenzene	541-73-1	1.32E-01	4.68E-02	7.94E-04	7.04E-06	1.35E-06	2.70E-07
SVOC	1,4-Dichlorobenzene	106-46-7	9.96E-02	6.90E-02	1.17E-03	7.90E-06	1.52E-06	3.03E-07
SVOC	2,2'-oxybis(1-Chloropropane)	108-60-1	4.50E-03	6.02E-02	1.02E-03	7.04E-06	1.35E-06	2.70E-07
SVOC	2,4,5-Trichlorophenol	95-95-4	1.78E-04	2.91E-02	4.93E-04	7.03E-06	1.35E-06	2.70E-07
SVOC	2,4-Dichlorophenol	120-83-2	1.30E-04	3.46E-02	5.86E-04	8.77E-06	1.68E-06	3.37E-07
SVOC	2,4-Dimethylphenol	105-67-9	8.20E-05	5.84E-02	9.89E-04	8.69E-06	1.67E-06	3.34E-07
SVOC	2,4-Dinitrotoluene	121-14-2	3.80E-06	2.03E-01	3.44E-03	7.06E-06	1.36E-06	2.71E-07
SVOC	2,6-Dinitrotoluene	606-20-2	3.06E-05	3.27E-02	5.54E-04	7.26E-06	1.39E-06	2.79E-07
SVOC	2-Chloronaphthalene	91-58-7	2.50E-02	4.68E-02	7.94E-04	7.04E-06	1.35E-06	2.70E-07
SVOC	2-Methylnaphthalene	91-57-6	2.04E-02	4.68E-02	7.94E-04	7.04E-06	1.35E-06	2.70E-07
SVOC	2-Methylphenol	95-48-7	4.92E-05	7.40E-02	1.25E-03	8.30E-06	1.59E-06	3.19E-07
SVOC	3,3'-Dichlorobenzidine	91-94-1	1.64E-07	1.94E-02	3.29E-04	6.74E-06	1.29E-06	
SVOC	4-Bromophenyl-phenylether	101-55-3	4.09E-03	4.68E-02	7.94E-04	7.04E-06	1.35E-06	
SVOC	4-Chloro-3-methylphenol	59-50-7	1.02E-04	4.68E-02	7.94E-04	7.04E-06	1.35E-06	2.70E-07
SVOC	4-Chlorophenyl-phenyl ether	7005-72-3	8.99E-03	4.68E-02	7.94E-04	7.04E-06	1.35E-06	
SVOC	4-Methylphenol	106-44-5	1.60E-05	4.68E-02	7.94E-04	7.04E-06	1.35E-06	2.70E-07
SVOC	4-Nitrophenol	100-02-7	1.23E-03	4.68E-02	7.94E-04	7.04E-06	1.35E-06	2.70E-07
SVOC	Acenaphthene	83-32-9	6.36E-03	4.21E-02	7.13E-04	7.69E-06	1.48E-06	2.95E-07
SVOC	Acenaphthylene	208-96-8	4.66E-03	4.68E-02	7.94E-04	7.04E-06	1.35E-06	2.70E-07
SVOC	Anthracene	120-12-7	2.67E-03	3.24E-02	5.49E-04	7.74E-06	1.49E-06	2.97E-07
SVOC	Benzo(a)anthracene	56-55-3	1.37E-04	5.10E-02	8.64E-04	9.00E-06	1.73E-06	
SVOC	Benzo(a)pyrene	50-32-8	4.63E-05	4.30E-02	7.29E-04	9.00E-06	1.73E-06	
SVOC	Benzo(b)fluoranthene	205-99-2	4.55E-03	2.26E-02	3.83E-04	5.56E-06	1.07E-06	
SVOC	Benzo(g,h,i)perylene	191-24-2	5.72E-06	4.68E-02	7.94E-04	7.04E-06	1.35E-06	
SVOC	Benzo(k)fluoranthene	207-08-9	3.40E-05	2.26E-02	3.83E-04	5.56E-06	1.07E-06	
SVOC	Benzoic Acid	65-85-0	6.31E-05	5.36E-02	9.08E-04	7.97E-06	1.53E-06	3.06E-07
SVOC	Benzyl Alcohol	100-51-6		4.68E-02	7.94E-04	7.04E-06	1.35E-06	
SVOC	Butylbenzylphthalate	85-68-7	5.17E-05	1.74E-02	2.95E-04	4.83E-06	9.27E-07	
SVOC	Carbazole	86-74-8		4.68E-02	7.94E-04	7.04E-06	1.35E-06	
SVOC	Chrysene	218-01-9	3.88E-03	2.48E-02	4.20E-04	6.21E-06	1.19E-06	
SVOC	Di-n-butylphthalate	84-74-2	3.85E-08	4.38E-02	7.42E-04	7.86E-06	1.51E-06	
SVOC	Di-n-octylphthalate	117-84-0	2.74E-03	1.51E-02	2.56E-04	3.58E-06	6.87E-07	
SVOC	Dibenzo(a,h)anthracene	53-70-3	6.03E-07	2.02E-02	3.42E-04	5.18E-06	9.94E-07	
SVOC	Dibenzofuran	132-64-9		4.68E-02	7.94E-04	7.04E-06	1.35E-06	
SVOC	Diethylphthalate	84-66-2	1.85E-05	2.56E-02	4.34E-04	6.35E-06	1.22E-06	
SVOC	Dimethylphthalate	131-11-3		4.68E-02	7.94E-04	7.04E-06	1.35E-06	
SVOC	Fluoranthene	206-44-0	6.60E-04	3.02E-02	5.12E-04	6.35E-06	1.22E-06	
SVOC	Fluorene	86-73-7	2.61E-03	3.63E-02	6.15E-04	7.88E-06	1.51E-06	3.03E-07
SVOC	Hexachlorobenzene	118-74-1	5.41E-02	5.42E-02	9.18E-04	5.91E-06	1.13E-06	
SVOC	Hexachlorobutadiene	87-68-3	3.34E-01	5.61E-02	9.50E-04	6.16E-06	1.18E-06	
SVOC	Indeno(1,2,3-cd)pyrene	193-39-5	6.56E-05	1.90E-02	3.22E-04	5.66E-06	1.09E-06	
SVOC	Isophorone	78-59-1	2.72E-04	6.23E-02	1.06E-03	6.76E-06	1.30E-06	2.60E-07

Table B-4: Vapor Flux (mg/m^2-s per mg/L) from Covered Ground Water to Ambient Air

Analyte Group	Substance	CASRN	H (unitless)	D_{air} (cm^2/s)	D_G (cm^2/s)	D_{water} (cm^2/s)	D_L (cm^2/s)	J_v (L/m^2-s)
SVOC	N-Nitroso-di-n-propylamine	621-64-7	9.23E-05	5.45E-02	9.23E-04	8.17E-06	1.57E-06	3.14E-07
SVOC	N-Nitrosodiphenylamine	86-30-6	2.05E-04	3.12E-02	5.29E-04	6.35E-06	1.22E-06	2.44E-07
SVOC	Naphthalene	91-20-3	1.98E-02	5.90E-02	1.00E-03	7.50E-06	1.44E-06	2.88E-07
SVOC	Pentachlorophenol	87-86-5	1.00E-06	5.60E-02	9.49E-04	6.10E-06	1.17E-06	
SVOC	Phenanthrene	85-01-8	1.61E-03	4.68E-02	7.94E-04	7.04E-06	1.35E-06	2.70E-07
SVOC	Phenol	108-95-2	1.63E-05	8.20E-02	1.39E-03	9.10E-06	1.75E-06	3.49E-07
SVOC	Pyrene	129-00-0	4.51E-04	2.72E-02	4.61E-04	7.24E-06	1.39E-06	
SVOC	bis(2-Chloroethyl) ether	111-44-4	7.38E-04	6.92E-02	1.17E-03	7.53E-06	1.45E-06	2.89E-07
SVOC	bis(2-Ethylhexyl)phthalate	117-81-7	4.18E-06	3.51E-02	5.95E-04	3.66E-06	7.03E-07	
P/PCB	4,4'-DDD	72-54-8	1.64E-04	1.69E-02	2.86E-04	4.76E-06	9.14E-07	
P/PCB	4,4'-DDE	72-55-9	8.61E-04	1.44E-02	2.44E-04	5.87E-06	1.13E-06	
P/PCB	4,4'-DDT	50-29-3	3.32E-04	1.37E-02	2.32E-04	4.95E-06	9.50E-07	
P/PCB	Aldrin	309-00-2	6.97E-03	1.32E-02	2.24E-04	4.86E-06	9.33E-07	
P/PCB	Aroclor-1242	53469-21-9	4.30E-02	2.05E-02	3.47E-04	5.60E-06	1.07E-06	
P/PCB	Aroclor-1248	12672-29-6	1.15E-01	1.42E-02	2.40E-04	5.60E-06	1.07E-06	
P/PCB	Aroclor-1254	11097-69-1	3.02E-02	1.27E-02	2.15E-04	5.60E-06	1.07E-06	
P/PCB	Aroclor-1260	11096-82-5	7.50E-03	1.27E-02	2.15E-04	5.60E-06	1.07E-06	
P/PCB	Dieldrin	60-57-1	5.84E-05	1.42E-02	2.40E-04	5.60E-06	1.07E-06	
P/PCB	Endosulfan I	959-98-8	4.13E-03	1.42E-02	2.40E-04	5.60E-06	1.07E-06	
P/PCB	Endosulfan sulfate	1031-07-8		1.42E-02	2.40E-04	5.60E-06	1.07E-06	
P/PCB	Endrin	72-20-8	4.00E-07	1.42E-02	2.40E-04	5.60E-06	1.07E-06	
P/PCB	Endrin aldehyde	7421-93-4	3.86E-07	1.42E-02	2.40E-04	5.60E-06	1.07E-06	
P/PCB	Endrin ketone	53494-70-5		1.42E-02	2.40E-04	5.60E-06	1.07E-06	
P/PCB	Heptachlor	76-44-8	4.47E-02	1.12E-02	1.90E-04	5.69E-06	1.09E-06	
P/PCB	Heptachlor epoxide	1024-57-3	3.90E-04	1.32E-02	2.24E-04	4.23E-06	8.12E-07	
P/PCB	Methoxychlor	72-43-5	6.48E-04	1.56E-02	2.64E-04	4.46E-06	8.56E-07	
P/PCB	alpha-BHC	319-84-6	4.35E-04	1.42E-02	2.41E-04	7.34E-06	1.41E-06	
P/PCB	alpha-Chlordane	5103-71-9	2.70E-03	1.18E-02	2.00E-04	4.73E-06	9.08E-07	
P/PCB	beta-BHC	319-85-7	3.05E-05	1.42E-02	2.41E-04	7.34E-06	1.41E-06	
P/PCB	gamma-BHC	58-89-9	5.74E-04	1.42E-02	2.41E-04	7.34E-06	1.41E-06	
P/PCB	gamma-Chlordane	5103-74-2	2.70E-03	1.18E-02	2.00E-04	4.73E-06	9.08E-07	
INORG	Antimony	7440-36-0		3.07E-02	5.20E-04	6.30E-06	1.21E-06	
INORG	Arsenic	7440-38-2		3.07E-02	5.20E-04	6.30E-06	1.21E-06	
INORG	Barium	7440-39-3		3.07E-02	5.20E-04	6.30E-06	1.21E-06	
INORG	Beryllium	7440-41-7		3.07E-02	5.20E-04	6.30E-06	1.21E-06	
INORG	Cadmium	7440-43-9		3.07E-02	5.20E-04	6.30E-06	1.21E-06	
INORG	Chromium 3+	16065-83-1		3.07E-02	5.20E-04	6.30E-06	1.21E-06	
INORG	Chromium 6+	18540-29-9		3.07E-02	5.20E-04	6.30E-06	1.21E-06	
INORG	Cobalt	7440-48-4		3.07E-02	5.20E-04	6.30E-06	1.21E-06	
INORG	Copper	7440-50-8		3.07E-02	5.20E-04	6.30E-06	1.21E-06	
INORG	Cyanide (total)	57-12-5		3.07E-02	5.20E-04	6.30E-06	1.21E-06	
INORG	Lead	7439-92-1		3.07E-02	5.20E-04	6.30E-06	1.21E-06	
INORG	Manganese	7439-96-5		3.07E-02	5.20E-04	6.30E-06	1.21E-06	
INORG	Mercury	7439-97-6	4.67E-01	3.07E-02	5.20E-04	6.30E-06	1.21E-06	
INORG	Nickel	7440-02-0		3.07E-02	5.20E-04	6.30E-06	1.21E-06	
INORG	Selenium	7782-49-2		3.07E-02	5.20E-04	6.30E-06	1.21E-06	
INORG	Silver	7440-22-4		3.07E-02	5.20E-04	6.30E-06	1.21E-06	
INORG	Thallium	7440-28-0		3.07E-02	5.20E-04	6.30E-06	1.21E-06	
INORG	Vanadium	7440-62-2		3.07E-02	5.20E-04	6.30E-06	1.21E-06	
INORG	Zinc	7440-66-6		3.07E-02	5.20E-04	6.30E-06	1.21E-06	
TIC	Acetaldehyde	75-07-0						
TIC	Acetophenone	98-86-2						
TIC	Azobenzene	103-33-3						
TIC	Butanol, 1-	71-36-3	3.61E-04	8.00E-02	1.36E-03	9.30E-06	1.79E-06	3.57E-07
TIC	Caprolactam	105-60-2						
TIC	Chlorodifluoromethane	75-45-6						
TIC	Cyclohexanone	108-94-1						
TIC	Diethyl ether	60-29-7						
TIC	Dioxane, 1,4-	123-91-1						
TIC	Ethanol, 2-(2-butoxyethoxy)-	112-34-5						
TIC	Hexane, n-	110-54-3						
TIC	Phenol, 4,4'-(1-methylethylidene)bis-	80-05-7						
TIC	Phthalic anhydride	85-44-9						

Notes:					
	Soil porosity	L/L-soil	**n**	**0.29**	Based on average of porosity values in RI report
	Water-filled soil porosity	L/L-soil	ϕ_w	0.15	SSG default
	Air-filled soil porosity	L/L-soil	ϕ_a	0.14	Calculated from n - ϕ_w
	Thickness capillary fringe	m	L_{cf}	0.5	Based on capillary rise for fine sand
	Thickness soil cover - Areas 1 & 4B	m	L	0.9	Depth to water table = 3 to 8 feet (RI report)
	Thickness above capillary fringe	m	L_a	0.4	Calculated from L - L_{cf}

Table B-5: Soil PM_{10} Emission

Unlimited Reservoir Model			**Wind Erosion**
Aerodynamic particle size multiplier			0.036
Ground cover fraction		**G**	0.5
Mode of aggregate size distribution	mm		0.53
Threshold friction velocity	m/s	$\mathbf{u'_t}$	0.50
Correction factor			1.25
Corrected friction velocity	m/s	$\mathbf{u^*_t}$	0.62
Roughness height	m	$\mathbf{z_0}$	0.005
Wind speed at 7 m	m/s	$\mathbf{u_t}$	11.3
Mean annual wind speed	m/s	$\mathbf{u_m}$	4.56
u_m/u_t			0.403
$x = 0.886\ u_t/u_m$			2.20
F(x)			0.160
Annual average PM_{10} flux	kg-soil/m^2-s		
Wind Erosion		$J_{10,w}$	5.2E-11
Excavation for Utility Maint. And Construction		$J_{10,c}$	1.0E-07

Table B-6: Air Dispersion Factors

Annual Average

C/Q (kg/m^3 per kg/m^2/s)

Exposure Location:	Area 1		Area 2			Area 3			Area 4A		Area 4B		Area 5A			Area 5B	Area 6		
Activity at Emission Location:	Routine	Exc	Routine	Exc	Const	Routine	Exc	Const	Routine	Exc	Routine	Exc	Routine	Exc	Const	Exc	Routine	Exc	Const
Emission Location:																			
Area 1	1.2E+01	**5.6E-01**	8.2E-01	NA	NA	2.8E-01	NA	NA	4.7E-01	NA	2.3E+00	NA	3.2E-01	2.0E-04	NA	NA	1.8E-01	1.2E-04	NA
Area 2	7.2E-01	NA	1.2E+01	**5.6E-01**	**3.3E+00**	1.6E+00	NA	NA	1.2E-01	NA	2.7E-01	NA	9.7E-01	8.0E-04	3.3E-02	NA	2.1E-01	2.0E-04	8.9E-03
Area 3	8.3E-02	NA	5.5E-01	NA	NA	1.2E+01	**5.6E-01**	**3.3E+00**	2.1E-02	NA	4.6E-02	NA	7.2E-01	1.7E-03	5.8E-02	NA	1.0E-01	3.9E-04	1.7E-02
Area 4A	1.2E+00	NA[1]	6.7E-01	NA[1]	NA[1]	4.4E-01	NA[1]	NA[1]	1.9E+01	NA[1]	8.7E-01	NA[1]	3.4E-01	NA[1]	NA	NA[1]	8.3E-01	NA[1]	NA
Area 4B	7.7E-01	NA	1.0E-01	NA	NA	5.6E-02	NA	NA	2.2E-01	NA	1.3E+01	**5.6E-01**	6.6E-02	9.6E-05	NA	NA	5.4E-02	7.7E-05	NA
Area 5B	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	**5.6E-01**	NA	NA	NA

Maximum 8-hr Average (WORKERS ONLY)

C/Q (kg/m^3 per kg/m^2/s)

Exposure Location:	Area 1	Area 2		Area 3		Area 4A	Area 4B	Area 5A	Area 5B	Area 6
Activity at Emission Location:	Exc	Exc	Const	Exc	Const	NA[2]	Exc	NA[2]	Exc	NA[2]
Excavation Location:										
1	**5.6E-01**	NA	NA	NA	NA	NA	NA	NA	NA	NA
2	NA	**5.6E-01**	**3.3E+00**	NA	NA	NA	NA	NA	NA	NA
3	NA	NA	NA	**5.6E-01**	**3.3E+00**	NA	NA	NA	NA	NA
4B	NA	NA	NA	NA	NA	NA	**5.6E-01**	NA	NA	NA
5B	NA	NA	NA	NA	NA	NA	NA	NA	**5.6E-01**	NA

Maximum 1-hr Average (WORKERS & RESIDENTS ONLY)

C/Q (kg/m^3 per kg/m^2/s)

Exposure Location:	Area 1	Area 2		Area 3		Area 4A	Area 4B	Area 5A		Area 5B	Area 6	
Activity at Emission Location:	Exc	Exc	Const	Exc	Const	NA[2]	Exc	Exc	Const	Exc	Exc	Const
Excavation Location:												
1	**2.5E+00**	NA	NA	NA	NA	NA	NA	6.9E-02	NA	NA	3.4E-02	NA
2	NA	**2.5E+00**	**1.5E+01**	NA	NA	NA	NA	1.5E-01	6.3E+00	NA	6.9E-02	2.3E+00
3	NA	NA	NA	**2.5E+00**	**1.5E+01**	NA	NA	3.6E-01	7.6E+00	NA	1.3E-01	3.8E+00
4B	NA	NA	NA	NA	NA	NA	**2.5E+00**	2.9E-02	NA	NA	2.7E-02	NA
5B	NA	NA	NA	NA	NA	NA	NA	NA	NA	**2.5E+00**	NA	NA

NA = Not Applicable

Bold = Dispersion factor from box model, rather than ISC3.

[1] Excavation is not expected in Area 4A, which is mostly wetlands.

[2] Worker exposures are not evaluated for this area.

Table B-7a: Particulate Concentrations (mg/m³) in Ambient Air from Soil - Current Land Use - Annual Average
ACS NPL Site, Griffith, Indiana

		Current/Future Scenario:	CURRENT					CURRENT				CURRENT				CURRENT					CURRENT				
		Location of Exposure:	AREA 1					AREA 4A				AREA 4B				AREA 5A					AREA 6				
		Type of Activity at Emission Location:	Routine Industrial/Undeveloped				Excavatio	Routine Industrial/Undeveloped				Routine Industrial/Undeveloped				Routine Industrial/Undeveloped				Excavation	Routine Industrial/Undeveloped				Excavation
		Location of Emission:	From Area 1	From Area 2	From Area 3	Total At Area	At Area	From Area 1	From Area 2	From Area 3	Total At Area	From Area 1	From Area 2	From Area 3	Total At Area	From Area 1	From Area 2	From Area 3	Total At Area	From Area 1	From Area 1	From Area 2	From Area 3	Total At Area	From Area 1
		C/Q (kg/m³ per kg/m²/s)	1.2E+01	7.2E-01	8.3E-02		5.6E-01	4.7E-01	1.2E-01	2.1E-02		2.3E+00	2.7E-01	4.6E-02		3.2E-01	9.7E-01	7.2E-01		2.0E-04	1.8E-01	2.1E-01	1.0E-01		1.2E-04
Analyte Group	Substance	CASRN	C_{air} (mg/m³)	C_{air} (mg/m³)	C_{air} (mg/m³)	C_{air} (mg/m³)	C_{air} (mg/m³)	C_{air} (mg/m³)	C_{air} (mg/m³)	C_{air} (mg/m³)	C_{air} (mg/m³)	C_{air} (mg/m³)	C_{air} (mg/m³)	C_{air} (mg/m³)	C_{air} (mg/m³)	C_{air} (mg/m³)	C_{air} (mg/m³)	C_{air} (mg/m³)	C_{air} (mg/m³)	C_{air} (mg/m³)	C_{air} (mg/m³)	C_{air} (mg/m³)	C_{air} (mg/m³)	C_{air} (mg/m³)	C_{air} (mg/m³)
VOC	1,1,1-Trichloroethane	71-55-6		5.1E-10	3.9E-14	5.1E-10	8.3E-05		8.5E-11	9.9E-15	8.5E-11		1.9E-10	2.2E-14	1.9E-10		6.9E-10	3.4E-13	6.9E-10	3.0E-08		1.5E-10	4.7E-14	1.5E-10	1.8E-08
VOC	1,1,2,2-Tetrachloroethane	79-34-5		1.4E-12		1.4E-12	2.2E-07		2.3E-13		2.3E-13		5.1E-13		5.1E-13		1.8E-12		1.8E-12	7.8E-11		3.9E-13		3.9E-13	4.7E-11
VOC	1,1,2-Trichloroethane	79-00-5	8.1E-12			8.1E-12	4.5E-07	3.2E-13			3.2E-13	1.6E-12			1.6E-12	2.2E-13			2.2E-13	1.6E-10	1.2E-13			1.2E-13	9.7E-11
VOC	1,1-Dichloroethane	75-34-3		4.5E-10	3.7E-13	4.5E-10	1.2E-06		7.5E-11	9.4E-14	7.5E-11		1.7E-10	2.1E-13	1.7E-10		6.1E-10	3.2E-12	6.1E-10	4.4E-10		1.3E-10	4.5E-13	1.3E-10	2.6E-10
VOC	1,1-Dichloroethene	75-35-4																							
VOC	1,2,4-Trimethylbenzene	95-63-6																							
VOC	1,2-Dichloroethane	107-06-2		2.5E-10		2.5E-10	2.2E-06		4.1E-11		4.1E-11		9.2E-11		9.2E-11		3.3E-10		3.3E-10	8.0E-10		7.2E-11		7.2E-11	4.8E-10
VOC	1,2-Dichloroethene (total)	540-59-0	7.5E-12	6.3E-10	3.3E-11	6.7E-10	1.3E-05	2.9E-13	1.1E-10	8.3E-12	1.1E-10	1.4E-12	2.4E-10	1.8E-11	2.6E-10	2.0E-13	8.5E-10	2.9E-10	1.1E-09	4.8E-09	1.1E-13	1.8E-10	4.0E-11	2.2E-10	2.9E-09
VOC	1,2-Dichloropropane	78-87-5		1.0E-10	8.2E-14	1.0E-10	1.2E-06		1.7E-11	2.1E-14	1.7E-11		3.8E-11	4.6E-14	3.8E-11		1.4E-10	7.1E-13	1.4E-10	4.4E-10		3.0E-11	9.9E-14	3.0E-11	2.6E-10
VOC	1,3,5-Trimethylbenzene	108-67-8																							
VOC	2-Butanone	78-93-3		1.9E-08		1.9E-08	2.2E-05		3.1E-09		3.1E-09		7.0E-09		7.0E-09		2.5E-08		2.5E-08	8.0E-09		5.4E-09		5.4E-09	4.8E-09
VOC	2-Hexanone	591-78-6		1.2E-09		1.2E-09			2.0E-10		2.0E-10		4.5E-10		4.5E-10		1.6E-09		1.6E-09			3.5E-10		3.5E-10	
VOC	4-Methyl-2-pentanone	108-10-1		3.1E-09		3.1E-09	2.4E-05		5.1E-10		5.1E-10		1.2E-09		1.2E-09		4.1E-09		4.1E-09	8.5E-09		9.0E-10		9.0E-10	5.1E-09
VOC	Acetone	67-64-1		6.0E-09	5.6E-13	6.0E-09	2.2E-05		1.0E-09	1.4E-13	1.0E-09		2.2E-09	3.1E-13	2.2E-09		8.1E-09	4.9E-12	8.1E-09	8.1E-09		1.7E-09	6.8E-13	1.7E-09	4.8E-09
VOC	Benzene	71-43-2		5.8E-10	1.4E-11	5.9E-10	1.8E-05		9.6E-11	3.5E-12	1.0E-10		2.2E-10	7.7E-12	2.2E-10		7.8E-10	1.2E-10	9.0E-10	6.5E-09		1.7E-10	1.7E-11	1.9E-10	3.9E-09
VOC	Bromodichloromethane	75-27-4																							
VOC	Carbon Disulfide	75-15-0	1.3E-12			1.3E-12		4.9E-14			4.9E-14	2.4E-13			2.4E-13	3.3E-14			3.3E-14		1.9E-14			1.9E-14	
VOC	Carbon Tetrachloride	56-23-5																							
VOC	Chlorobenzene	108-90-7			2.7E-11	2.7E-11	5.6E-07			6.8E-12	6.8E-12			1.5E-11	1.5E-11			2.3E-10	2.3E-10	2.0E-10			3.2E-11	3.2E-11	1.2E-10
VOC	Chloroethane	75-00-3																							
VOC	Chloroform	67-66-3	1.9E-12	7.1E-10	4.3E-14	7.1E-10	1.6E-05	7.4E-14	1.2E-10	1.1E-14	1.2E-10	3.6E-13	2.7E-10	2.4E-14	2.7E-10	5.0E-14	9.6E-10	3.8E-13	9.6E-10	5.8E-09	2.8E-14	2.1E-10	5.2E-14	2.1E-10	3.5E-09
VOC	Chloromethane	74-87-3																							
VOC	Ethyl Benzene	100-41-4		5.8E-09	6.1E-10	6.4E-09	3.3E-05		9.6E-10	1.5E-10	1.1E-09		2.2E-09	3.4E-10	2.5E-09		7.8E-09	5.3E-09	1.3E-08	1.2E-08		1.7E-09	7.3E-10	2.4E-09	7.0E-09
VOC	Methylene Chloride	75-09-2		5.6E-10	8.7E-13	5.6E-10	1.9E-05		9.4E-11	2.2E-13	9.4E-11		2.1E-10	4.8E-13	2.1E-10		7.6E-10	7.5E-12	7.6E-10	7.0E-09		1.6E-10	1.0E-12	1.6E-10	4.2E-09
VOC	Styrene	100-42-5		3.7E-10	1.0E-10	4.7E-10	5.0E-06		6.2E-11	2.5E-11	8.7E-11		1.4E-10	5.5E-11	1.9E-10		5.0E-10	8.7E-10	1.4E-09	1.8E-09		1.1E-10	1.2E-10	2.3E-10	1.1E-09
VOC	Tetrachloroethene	127-18-4	2.2E-10	4.8E-09	1.1E-09	6.1E-09	4.1E-05	8.7E-12	8.0E-10	2.7E-10	1.1E-09	4.3E-11	1.8E-09	6.0E-10	2.5E-09	5.9E-12	6.5E-09	9.4E-09	1.6E-08	1.5E-08	3.3E-12	1.4E-09	1.3E-09	2.7E-09	8.8E-09
VOC	Tetrahydrofuran	109-99-9																							
VOC	Toluene	108-88-3	8.3E-11	2.5E-08	2.8E-09	2.8E-08	6.8E-04	3.3E-12	4.2E-09	7.0E-10	4.9E-09	1.6E-11	9.5E-09	1.5E-09	1.1E-08	2.2E-12	3.4E-08	2.4E-08	5.8E-08	2.4E-07	1.2E-12	7.4E-09	3.3E-09	1.1E-08	1.5E-07
VOC	Trichloroethene	79-01-6	6.0E-11	2.1E-09	4.3E-10	2.6E-09	1.9E-05	2.3E-12	3.5E-10	1.1E-10	4.6E-10	1.1E-11	7.8E-10	2.4E-10	1.0E-09	1.6E-12	2.8E-09	3.8E-09	6.6E-09	6.8E-09	8.9E-13	6.0E-10	5.2E-10	1.1E-09	4.1E-09
VOC	Vinyl Chloride	75-01-4		4.1E-12		4.1E-12			6.9E-13		6.9E-13		1.6E-12		1.6E-12		5.6E-12		5.6E-12			1.2E-12		1.2E-12	
VOC	Xylenes (total)	1330-20-7	2.9E-09	5.2E-08	2.5E-09	5.7E-08	1.6E-04	1.1E-10	8.6E-09	6.3E-10	9.4E-09	5.5E-10	1.9E-08	1.4E-09	2.1E-08	7.7E-11	7.0E-08	2.1E-08	9.1E-08	5.6E-08	4.3E-11	1.5E-08	3.0E-09	1.8E-08	3.4E-08
VOC	cis-1,2-Dichloroethene	156-59-2		8.7E-12		8.7E-12	6.7E-05		1.4E-12		1.4E-12		3.2E-12		3.2E-12		1.2E-11		1.2E-11	2.4E-08		2.5E-12		2.5E-12	1.4E-08
VOC	m,p-xylene	6777-61-2		4.0E-11		4.0E-11	8.9E-05		6.7E-12		6.7E-12		1.5E-11		1.5E-11		5.4E-11		5.4E-11	3.2E-08		1.2E-11		1.2E-11	1.9E-08
VOC	ortho-xylene	95-47-6		2.0E-11		2.0E-11	1.8E-05		3.4E-12		3.4E-12		7.7E-12		7.7E-12		2.8E-11		2.8E-11	6.5E-09		6.0E-12		6.0E-12	3.9E-09
VOC	p-Cymene	99-87-6																							
VOC	trans-1,2-Dichloroethene	156-60-5																							
SVOC	1,2,4-Trichlorobenzene	120-82-1		3.4E-10		3.4E-10	2.4E-07		5.7E-11		5.7E-11		1.3E-10		1.3E-10		4.6E-10		4.6E-10	8.6E-11		9.9E-11		9.9E-11	5.2E-11
SVOC	1,2-Dichlorobenzene	95-50-1		2.0E-09	2.6E-12	2.0E-09	8.5E-07		3.4E-10	6.5E-13	3.4E-10		7.6E-10	1.4E-12	7.6E-10		2.7E-09	2.2E-11	2.8E-09	3.0E-10		5.9E-10	3.1E-12	5.9E-10	1.8E-10
SVOC	1,3-Dichlorobenzene	541-73-1					4.9E-08													1.8E-11					1.1E-11
SVOC	1,4-Dichlorobenzene	106-46-7		3.4E-11		3.4E-11	2.9E-07		5.7E-12		5.7E-12		1.3E-11		1.3E-11		4.6E-11		4.6E-11	1.0E-10		1.0E-11		1.0E-11	6.2E-11
SVOC	2,2'-oxybis(1-Chloropropane)	108-60-1																							
SVOC	2,4,5-Trichlorophenol	95-95-4			7.4E-13	7.4E-13				1.9E-13	1.9E-13			4.1E-13	4.1E-13			6.4E-12	6.4E-12				8.9E-13	8.9E-13	
SVOC	2,4-Dichlorophenol	120-83-2					2.3E-07													8.2E-11					4.9E-11
SVOC	2,4-Dimethylphenol	105-67-9		1.2E-09	2.1E-11	1.2E-09	6.0E-07		2.0E-10	5.4E-12	2.1E-10		4.6E-10	1.2E-11	4.7E-10		1.7E-09	1.8E-10	1.8E-09	2.2E-10		3.6E-10	2.6E-11	3.8E-10	1.3E-10
SVOC	2,4-Dinitrotoluene	121-14-2																							
SVOC	2,6-Dinitrotoluene	606-20-2		1.3E-10		1.3E-10			2.2E-11		2.2E-11		4.9E-11		4.9E-11		1.8E-10		1.8E-10			3.8E-11		3.8E-11	
SVOC	2-Chloronaphthalene	91-58-7																							
SVOC	2-Methylnaphthalene	91-57-6	2.1E-10	2.0E-08	7.4E-11	2.0E-08	4.0E-06	8.3E-12	3.3E-09	1.9E-11	3.3E-09	4.1E-11	7.3E-09	4.1E-11	7.4E-09	5.7E-12	2.6E-08	6.4E-10	2.7E-08	1.4E-09	3.2E-12	5.7E-09	8.9E-11	5.8E-09	8.6E-10
SVOC	2-Methylphenol	95-48-7		1.4E-09	2.0E-11	1.4E-09	6.2E-07		2.4E-10	5.2E-12	2.4E-10		5.3E-10	1.1E-11	5.5E-10		1.9E-09	1.8E-10	2.1E-09	2.2E-10		4.2E-10	2.5E-11	4.4E-10	1.3E-10
SVOC	3,3'-Dichlorobenzidine	91-94-1	1.3E-10			1.3E-10		5.2E-12			5.2E-12	2.5E-11			2.5E-11	3.5E-12			3.5E-12		2.0E-12			2.0E-12	
SVOC	4-Bromophenyl-phenylether	101-55-3																							
SVOC	4-Chloro-3-methylphenol	59-50-7																							
SVOC	4-Chlorophenyl-phenyl ether	7005-72-3																							
SVOC	4-Methylphenol	106-44-5		2.0E-09	2.0E-11	2.0E-09	7.0E-07		3.3E-10	5.0E-12	3.4E-10		7.5E-10	1.1E-11	7.6E-10		2.7E-09	1.7E-10	2.9E-09	2.5E-10		5.8E-10	2.4E-11	6.0E-10	1.5E-10
SVOC	4-Nitrophenol	100-02-7																							
SVOC	Acenaphthene	83-32-9		5.6E-10	1.6E-12	5.7E-10	6.1E-07		9.4E-11	3.9E-13	9.4E-11		2.1E-10	8.7E-13	2.1E-10		7.6E-10	1.4E-11	7.7E-10	2.2E-10		1.6E-10	1.9E-12	1.7E-10	1.3E-10
SVOC	Acenaphthylene	208-96-8	2.3E-10			2.3E-10	3.1E-07	9.1E-12			9.1E-12	4.4E-11			4.4E-11	6.2E-12			6.2E-12	1.1E-10	3.5E-12			3.5E-12	6.6E-11
SVOC	Anthracene	120-12-7	5.6E-11	4.9E-11	2.9E-12	1.1E-10	6.1E-08	2.2E-12	8.1E-12	7.2E-13	1.1E-11	1.1E-11	1.8E-11	1.6E-12	3.1E-11	1.5E-12	6.6E-11	2.5E-11	9.2E-11	2.2E-11	8.4E-13	1.4E-11	3.4E-12	1.9E-11	1.3E-11
SVOC	Benzo(a)anthracene	56-55-3	3.7E-11	1.0E-10	1.0E-11	1.5E-10		1.4E-12	1.7E-11	2.6E-12	2.1E-11	7.1E-12	3.8E-11	5.8E-12	5.1E-11	9.9E-13	1.4E-10	9.0E-11	2.3E-10		5.5E-13	3.0E-11	1.3E-11	4.3E-11	
SVOC	Benzo(a)pyrene	50-32-8	5.2E-11	5.6E-11		1.1E-10		2.0E-12	9.4E-12		1.1E-11	9.9E-12	2.1E-11		3.1E-11	1.4E-12	7.6E-11		7.7E-11		7.8E-13	1.6E-11		1.7E-11	
SVOC	Benzo(b)fluoranthene	205-99-2	5.4E-11	2.0E-10	1.9E-12	2.6E-10		2.1E-12	3.3E-11	4.7E-13	3.6E-11	1.0E-11	7.5E-11	1.0E-12	8.6E-11	1.4E-12	2.7E-10	1.6E-11	2.9E-10		8.1E-13	5.8E-11	2.2E-12	6.1E-11	
SVOC	Benzo(g,h,i)perylene	191-24-2		5.6E-11		5.6E-11			9.4E-12		9.4E-12		2.1E-11		2.1E-11		7.6E-11		7.6E-11			1.6E-11		1.6E-11	
SVOC	Benzo(k)fluoranthene	207-08-9	4.5E-11	2.0E-10	1.9E-12	2.5E-10		1.8E-12	3.3E-11	4.7E-13	3.5E-11	8.7E-12	7.5E-11	1.0E-12	8.4E-11	1.2E-12	2.7E-10	1.6E-11	2.9E-10		6.8E-13	5.8E-11	2.2E-12	6.1E-11	
SVOC	Benzoic Acid	65-85-0		4.5E-09		4.5E-09	7.2E-07		7.5E-10		7.5E-10		1.7E-09		1.7E-09		6.1E-09		6.1E-09	2.6E-10		1.3E-09		1.3E-09	1.6E-10
SVOC	Benzyl Alcohol	100-51-6		1.0E-09		1.0E-09			1.7E-10		1.7E-10		3.7E-10		3.7E-10		1.3E-09		1.3E-09			2.9E-10		2.9E-10	
SVOC	Butylbenzylphthalate	85-68-7		1.6E-08	7.4E-11	1.6E-08	7.0E-06		2.6E-09	1.9E-11	2.7E-09		5.9E-09	4.1E-11	6.0E-09		2.1E-08	6.4E-10	2.2E-08	2.5E-09		4.6E-09	8.9E-11	4.7E-09	1.5E-09
SVOC	Carbazole	86-74-8																							
SVOC	Chrysene	218-01-9	4.6E-11	1.4E-10	5.6E-12	1.9E-10		1.8E-12	2.4E-11	1.4E-12	2.7E-11	8.9E-12	5.4E-11	3.1E-12	6.6E-11	1.2E-12	1.9E-10	4.9E-11	2.4E-10		7.0E-13	4.2E-11	6.8E-12	4.9E-11	
SVOC	Di-n-butylphthalate	84-74-2	3.2E-11	2.8E-09	6.5E-11	2.9E-09	4.8E-06	1.3E-12	4.7E-10	1.6E-11	4.9E-10	6.1E-12	1.1E-09	3.6E-11	1.1E-09	8.5E-13	3.8E-09	5.6E-10	4.4E-09	1.7E-09	4.8E-13	8.3E-10	7.8E-11	9.1E-10	1.0E-09
SVOC	Di-n-octylphthalate	117-84-0	6.9E-11	4.9E-10	5.6E-12	5.6E-10	5.6E-07	2.7E-12	8.1E-11	1.4E-12	8.6E-11	1.3E-11	1.8E-10	3.1E-12	2.0E-10	1.8E-12	6.6E-10	4.9E-11	7.1E-10	2.0E-10	1.0E-12	1.4E-10	6.8E-12	1.5E-10	1.2E-10
SVOC	Dibenzo(a,h)anthracene	53-70-3																							
SVOC	Dibenzofuran	132-64-9		9.4E-11	1.9E-12	9.6E-11	2.3E-07		1.6E-11	4.7E-13	1.6E-11		3.5E-11	1.0E-12	3.6E-11		1.3E-10	1.6E-11	1.4E-10	8.4E-11		2.7E-11	2.2E-12	3.0E-11	5.0E-11

Table B-7a: Particulate Concentrations (mg/m^3) in Ambient Air from Soil - Current Land Use - Annual Average
ACS NPL Site, Griffith, Indiana

		Current/Future Scenario:	CURRENT					CURRENT				CURRENT				CURRENT					CURRENT				
		Location of Exposure:	AREA 1					AREA 4A				AREA 4B				AREA 5A					AREA 6				
		Type of Activity at Emission Location:	Routine Industrial/Undeveloped				Excavatio	Routine Industrial/Undeveloped				Routine Industrial/Undeveloped				Routine Industrial/Undeveloped				Excavation	Routine Industrial/Undeveloped				Excavation
		Location of Emission:	From Area 1	From Area 2	From Area 3	Total At Area	At Area	From Area 1	From Area 2	From Area 3	Total At Area	From Area 1	From Area 2	From Area 3	Total At Area	From Area 1	From Area 2	From Area 3	Total At Area	From Area 1	From Area 1	From Area 2	From Area 3	Total At Area	From Area 1
		C/Q (kg/m^3 per kg/m^2/s)	1.2E+01	7.2E-01	8.3E-02		5.6E-01	4.7E-01	1.2E-01	2.1E-02	- -	2.3E+00	2.7E-01	4.6E-02		3.2E-01	9.7E-01	7.2E-01		2.0E-04	1.8E-01	2.1E-01	1.0E-01		1.2E-04
Analyte Group	Substance	CASRN	C_{air} (mg/m^3)	C_{air} (mg/m^3)	C_{air} (mg/m^3)	C_{air} (mg/m^3)	C_{air} (mg/m^3)	C_{air} (mg/m^3)	C_{air} (mg/m^3)	C_{air} (mg/m^3)	C_{air} (mg/m^3)	C_{air} (mg/m^3)	C_{air} (mg/m^3)	C_{air} (mg/m^3)	C_{air} (mg/m^3)	C_{air} (mg/m^3)	C_{air} (mg/m^3)	C_{air} (mg/m^3)	C_{air} (mg/m^3)	C_{air} (mg/m^3)	C_{air} (mg/m^3)	C_{air} (mg/m^3)	C_{air} (mg/m^3)	C_{air} (mg/m^3)	C_{air} (mg/m^3)
SVOC	Diethylphthalate	84-66-2		9.3E-10	6.5E-13	9.3E-10	8.7E-07		1.6E-10	1.6E-13	1.6E-10		3.5E-10	3.6E-13	3.5E-10		1.3E-09	5.6E-12	1.3E-09	3.1E-10		2.7E-10	7.8E-13	2.7E-10	1.9E-10
SVOC	Dimethylphthalate	131-11-3		9.8E-09	6.1E-12	9.8E-09	3.0E-06		1.6E-09	1.5E-12	1.6E-09		3.7E-09	3.4E-12	3.7E-09		1.3E-08	5.3E-11	1.3E-08	1.1E-09		2.9E-09	7.3E-12	2.9E-09	6.5E-10
SVOC	Fluoranthene	206-44-0	6.1E-11	1.5E-10	1.5E-11	2.3E-10	2.1E-07	2.4E-12	2.6E-11	3.7E-12	3.2E-11	1.2E-11	5.8E-11	8.2E-12	7.8E-11	1.6E-12	2.1E-10	1.3E-10	3.4E-10	7.6E-11	9.2E-13	4.5E-11	1.8E-11	6.4E-11	4.6E-11
SVOC	Fluorene	86-73-7		6.7E-10	2.6E-12	6.7E-10	5.8E-07		1.1E-10	6.7E-13	1.1E-10		2.5E-10	1.5E-12	2.5E-10		9.0E-10	2.3E-11	9.2E-10	2.1E-10		1.9E-10	3.2E-12	2.0E-10	1.3E-10
SVOC	Hexachlorobenzene	118-74-1	1.8E-11			1.8E-11		7.1E-13			7.1E-13	3.5E-12			3.5E-12	4.8E-13			4.8E-13		2.7E-13			2.7E-13	
SVOC	Hexachlorobutadiene	87-68-3		5.1E-10		5.1E-10	3.3E-07		8.6E-11		8.6E-11		1.9E-10		1.9E-10		6.9E-10		6.9E-10	1.2E-10		1.5E-10		1.5E-10	7.2E-11
SVOC	Indeno(1,2,3-cd)pyrene	193-39-5	2.8E-11	5.3E-11		8.0E-11		1.1E-12	8.8E-12		9.9E-12	5.3E-12	2.0E-11		2.5E-11	7.4E-13	7.1E-11		7.2E-11		4.1E-13	1.5E-11		1.6E-11	
SVOC	Isophorone	78-59-1	8.8E-11	8.7E-09	1.7E-10	8.9E-09	1.2E-05	3.4E-12	1.4E-09	4.4E-11	1.5E-09	1.7E-11	3.2E-09	9.6E-11	3.4E-09	2.3E-12	1.2E-08	1.5E-09	1.3E-08	4.3E-09	1.3E-12	2.5E-09	2.1E-10	2.7E-09	2.6E-09
SVOC	N-Nitroso-di-n-propylamine	621-64-7																							
SVOC	N-Nitrosodiphenylamine	86-30-6			1.9E-11	1.9E-11				4.7E-12	4.7E-12			1.0E-11	1.0E-11			1.6E-10	1.6E-10				2.2E-11	2.2E-11	
SVOC	Naphthalene	91-20-3		3.8E-09	1.2E-10	3.9E-09	6.4E-06		6.4E-10	3.1E-11	6.7E-10		1.4E-09	6.7E-11	1.5E-09		5.1E-09	1.1E-09	6.2E-09	2.3E-09		1.1E-09	1.5E-10	1.3E-09	1.4E-09
SVOC	Pentachlorophenol	87-86-5		1.7E-09	6.5E-12	1.7E-09	1.1E-06		2.9E-10	1.6E-12	2.9E-10		6.5E-10	3.6E-12	6.6E-10		2.3E-09	5.6E-11	2.4E-09	3.9E-10		5.1E-10	7.8E-12	5.1E-10	2.3E-10
SVOC	Phenanthrene	85-01-8	3.8E-11	6.7E-10	1.3E-11	7.2E-10	5.0E-07	1.5E-12	1.1E-10	3.4E-12	1.2E-10	7.3E-12	2.5E-10	7.4E-12	2.6E-10	1.0E-12	9.0E-10	1.2E-10	1.0E-09	1.8E-10	5.7E-13	1.9E-10	1.6E-11	2.1E-10	1.1E-10
SVOC	Phenol	108-95-2		2.1E-09	2.8E-11	2.1E-09	1.2E-06		3.4E-10	7.0E-12	3.5E-10		7.8E-10	1.5E-11	7.9E-10		2.8E-09	2.4E-10	3.0E-09	4.2E-10		6.0E-10	3.3E-11	6.4E-10	2.5E-10
SVOC	Pyrene	129-00-0	7.5E-11	3.0E-10	1.0E-11	3.9E-10	3.3E-07	2.9E-12	5.0E-11	2.5E-12	5.6E-11	1.4E-11	1.1E-10	5.5E-12	1.3E-10	2.0E-12	4.1E-10	8.7E-11	4.9E-10	1.2E-10	1.1E-12	8.8E-11	1.2E-11	1.0E-10	7.1E-11
SVOC	bis(2-Chloroethyl) ether	111-44-4		7.1E-10		7.1E-10	5.6E-07		1.2E-10		1.2E-10		2.7E-10		2.7E-10		9.6E-10		9.6E-10	2.0E-10		2.1E-10		2.1E-10	1.2E-10
SVOC	bis(2-Ethylhexyl)phthalate	117-81-7	6.1E-09	1.3E-08	1.9E-09	2.1E-08	1.8E-05	2.4E-10	2.1E-09	4.7E-10	2.9E-09	1.2E-09	4.8E-09	1.0E-09	7.0E-09	1.6E-10	1.7E-08	1.6E-08	3.4E-08	6.6E-09	9.2E-11	3.8E-09	2.2E-09	6.1E-09	4.0E-09
P/PCB	4,4'-DDD	72-54-8		5.5E-11	6.5E-13	5.5E-11	2.0E-07		9.1E-12	1.6E-13	9.3E-12		2.1E-11	3.6E-13	2.1E-11		7.4E-11	5.6E-12	7.9E-11	7.2E-11		1.6E-11	7.8E-13	1.7E-11	4.3E-11
P/PCB	4,4'-DDE	72-55-9		3.3E-11		3.3E-11			5.5E-12		5.5E-12		1.2E-11		1.2E-11		4.5E-11		4.5E-11			9.7E-12		9.7E-12	
P/PCB	4,4'-DDT	50-29-3		4.7E-11		4.7E-11	2.7E-07		7.8E-12		7.8E-12		1.8E-11		1.8E-11		6.3E-11		6.3E-11	9.6E-11		1.4E-11		1.4E-11	5.8E-11
P/PCB	Aldrin	309-00-2		2.3E-10		2.3E-10			3.8E-11		3.8E-11		8.5E-11		8.5E-11		3.1E-10		3.1E-10			6.6E-11		6.6E-11	
P/PCB	Aroclor-1242	3469-21-9	2.5E-10		5.3E-11	3.1E-10	1.7E-06	9.9E-12		1.3E-11	2.3E-11	4.9E-11		2.9E-11	7.8E-11	6.8E-12		4.6E-10	4.6E-10	6.1E-10	3.8E-12		6.3E-11	6.7E-11	3.7E-10
P/PCB	Aroclor-1248	2672-29-6	3.4E-10	1.9E-09	3.0E-11	2.2E-09	1.2E-06	1.3E-11	3.1E-10	7.7E-12	3.3E-10	6.4E-11	7.0E-10	1.7E-11	7.8E-10	8.9E-12	2.5E-09	2.6E-10	2.8E-09	4.2E-10	5.0E-12	5.4E-10	3.6E-11	5.9E-10	2.5E-10
P/PCB	Aroclor-1254	1097-69-1	1.5E-09	1.4E-09	4.0E-11	2.9E-09	1.9E-06	5.9E-11	2.3E-10	1.0E-11	2.9E-10	2.9E-10	5.1E-10	2.2E-11	8.2E-10	4.0E-11	1.8E-09	3.5E-10	2.2E-09	7.0E-10	2.3E-11	3.9E-10	4.8E-11	4.7E-10	4.2E-10
P/PCB	Aroclor-1260	1096-82-5	3.1E-10	1.3E-08		1.3E-08	1.2E-06	1.2E-11	2.2E-09		2.2E-09	6.0E-11	4.9E-09		4.9E-09	8.3E-12	1.7E-08		1.8E-08	4.4E-10	4.7E-12	3.8E-09		3.8E-09	2.6E-10
P/PCB	Dieldrin	60-57-1					1.3E-08													4.8E-12					2.9E-12
P/PCB	Endosulfan I	959-98-8					6.7E-08													2.4E-11					1.4E-11
P/PCB	Endosulfan sulfate	1031-07-8																							
P/PCB	Endrin	72-20-8					8.9E-08													3.2E-11					1.9E-11
P/PCB	Endrin aldehyde	7421-93-4																							
P/PCB	Endrin ketone	3494-70-5	6.9E-12			6.9E-12		2.7E-13			2.7E-13	1.3E-12			1.3E-12	1.8E-13			1.8E-13		1.0E-13			1.0E-13	
P/PCB	Heptachlor	76-44-8			3.8E-13	3.8E-13				9.7E-14	9.7E-14			2.1E-13	2.1E-13			3.3E-12	3.3E-12				4.6E-13	4.6E-13	
P/PCB	Heptachlor epoxide	1024-57-3			1.8E-13	1.8E-13				4.6E-14	4.6E-14			1.0E-13	1.0E-13			1.6E-12	1.6E-12				2.2E-13	2.2E-13	
P/PCB	Methoxychlor	72-43-5																							
P/PCB	alpha-BHC	319-84-6		1.2E-11		1.2E-11			2.1E-12		2.1E-12		4.7E-12		4.7E-12		1.7E-11		1.7E-11			3.6E-12		3.6E-12	
P/PCB	alpha-Chlordane	5103-71-9																							
P/PCB	beta-BHC	319-85-7		2.4E-11		2.4E-11			3.9E-12		3.9E-12		8.9E-12		8.9E-12		3.2E-11		3.2E-11			6.9E-12		6.9E-12	
P/PCB	gamma-BHC	58-89-9																							
P/PCB	gamma-Chlordane	5103-74-2					6.7E-08													2.4E-11					1.4E-11
INORG	Antimony	7440-36-0	4.5E-10	2.5E-09	2.9E-10	3.2E-09	9.0E-07	1.8E-11	4.1E-10	7.4E-11	5.0E-10	8.6E-11	9.2E-10	1.6E-10	1.2E-09	1.2E-11	3.3E-09	2.5E-09	5.9E-09	3.2E-10	6.7E-12	7.2E-10	3.5E-10	1.1E-09	1.9E-10
INORG	Arsenic	7440-38-2	1.7E-09	1.8E-10	1.3E-10	2.1E-09	2.4E-07	6.8E-11	3.0E-11	3.4E-11	1.3E-10	3.3E-10	6.9E-11	7.4E-11	4.7E-10	4.6E-11	2.5E-10	1.2E-09	1.4E-09	8.6E-11	2.6E-11	5.3E-11	1.6E-10	2.4E-10	5.2E-11
INORG	Barium	7440-39-3	9.3E-08	3.7E-08	1.1E-08	1.4E-07	1.3E-05	3.6E-09	6.1E-09	2.7E-09	1.2E-08	1.8E-08	1.4E-08	5.9E-09	3.7E-08	2.5E-09	4.9E-08	9.3E-08	1.4E-07	4.7E-09	1.4E-09	1.1E-08	1.3E-08	2.5E-08	2.8E-09
INORG	Beryllium	7440-41-7	2.0E-09	1.2E-11	6.5E-12	2.0E-09	1.1E-08	7.7E-11	2.0E-12	1.6E-12	8.0E-11	3.7E-10	4.4E-12	3.6E-12	3.8E-10	5.2E-11	1.6E-11	5.6E-11	1.2E-10	4.1E-12	2.9E-11	3.4E-12	7.8E-12	4.1E-11	2.5E-12
INORG	Cadmium	7440-43-9	1.1E-09	4.0E-09	6.9E-10	5.7E-09	8.1E-07	4.1E-11	6.6E-10	1.7E-10	8.8E-10	2.0E-10	1.5E-09	3.8E-10	2.1E-09	2.8E-11	5.4E-09	6.0E-09	1.1E-08	2.9E-10	1.6E-11	1.2E-09	8.3E-10	2.0E-09	1.8E-10
INORG	Chromium 3+	6065-83-1	1.7E-08	4.8E-08	4.8E-09	7.0E-08	9.1E-06	6.7E-10	8.0E-09	1.2E-09	9.8E-09	3.3E-09	1.8E-08	2.7E-09	2.4E-08	4.6E-10	6.4E-08	4.2E-08	1.1E-07	3.3E-09	2.6E-10	1.4E-08	5.8E-09	2.0E-08	2.0E-09
INORG	Chromium 6+	8540-29-9	2.9E-09	8.0E-09	8.1E-10	1.2E-08	1.5E-06	1.1E-10	1.3E-09	2.0E-10	1.6E-09	5.5E-10	3.0E-09	4.5E-10	4.0E-09	7.6E-11	1.1E-08	7.0E-09	1.8E-08	5.4E-10	4.3E-11	2.3E-09	9.7E-10	3.3E-09	3.3E-10
INORG	Cobalt	7440-48-4	2.3E-09	5.3E-10	2.5E-10	3.0E-09	5.9E-07	8.8E-11	8.9E-11	6.2E-11	2.4E-10	4.3E-10	2.0E-10	1.4E-10	7.7E-10	6.0E-11	7.2E-10	2.1E-09	2.9E-09	2.1E-10	3.4E-11	1.6E-10	3.0E-10	4.9E-10	1.3E-10
INORG	Copper	7440-50-8	1.7E-08	5.0E-08	5.2E-09	7.2E-08	3.6E-06	6.7E-10	8.3E-09	1.3E-09	1.0E-08	3.3E-09	1.9E-08	2.9E-09	2.5E-08	4.6E-10	6.7E-08	4.5E-08	1.1E-07	1.3E-09	2.6E-10	1.4E-08	6.2E-09	2.1E-08	7.8E-10
INORG	Cyanide (total)	57-12-5	4.9E-10		2.1E-10	7.0E-10	5.3E-07	1.9E-11		5.3E-11	7.2E-11	9.3E-11		1.2E-10	2.1E-10	1.3E-11		1.8E-09	1.8E-09	1.9E-10	7.3E-12		2.5E-10	2.6E-10	1.1E-10
INORG	Lead	7439-92-1	8.1E-08	3.8E-07	4.6E-08	5.1E-07	4.7E-05	3.2E-09	6.4E-08	1.2E-08	7.9E-08	1.5E-08	1.4E-07	2.6E-08	1.9E-07	2.1E-09	5.2E-07	4.0E-07	9.2E-07	1.7E-08	1.2E-09	1.1E-07	5.6E-08	1.7E-07	1.0E-08
INORG	Manganese	7439-96-5	7.8E-07	8.9E-09	6.7E-09	7.9E-07	2.0E-05	3.0E-08	1.5E-09	1.7E-09	3.4E-08	1.5E-07	3.3E-09	3.7E-09	1.6E-07	2.1E-08	1.2E-08	5.8E-08	9.1E-08	7.3E-09	1.2E-08	2.6E-09	8.0E-09	2.2E-08	4.4E-09
INORG	Mercury	7439-97-6	2.4E-09	3.0E-10	4.1E-11	2.7E-09	1.3E-07	9.5E-11	4.9E-11	1.0E-11	1.5E-10	4.6E-10	1.1E-10	2.3E-11	6.0E-10	6.4E-11	4.0E-10	3.6E-10	8.2E-10	4.6E-11	3.6E-11	8.6E-11	5.0E-11	1.7E-10	2.8E-11
INORG	Nickel	7440-02-0	4.8E-09	9.3E-10	2.3E-10	6.0E-09	4.8E-07	1.9E-10	1.5E-10	5.8E-11	4.0E-10	9.2E-10	3.5E-10	1.3E-10	1.4E-09	1.3E-10	1.2E-09	2.0E-09	3.4E-09	1.7E-10	7.2E-11	2.7E-10	2.8E-10	6.2E-10	1.0E-10
INORG	Selenium	7782-49-2	2.7E-10	1.0E-10	7.5E-11	4.5E-10	3.3E-08	1.1E-11	1.7E-11	1.9E-11	4.7E-11	5.2E-11	3.9E-11	4.1E-11	1.3E-10	7.2E-12	1.4E-10	6.5E-10	7.9E-10	1.2E-11	4.1E-12	3.0E-11	9.0E-11	1.2E-10	7.2E-12
INORG	Silver	7440-22-4	1.8E-10	3.7E-10		5.5E-10		7.1E-12	6.2E-11		6.9E-11	3.5E-11	1.4E-10		1.7E-10	4.8E-12	5.0E-10		5.0E-10		2.7E-12	1.1E-10		1.1E-10	
INORG	Thallium	7440-28-0		2.7E-11		2.7E-11			4.5E-12		4.5E-12		1.0E-11		1.0E-11		3.7E-11		3.7E-11			7.9E-12		7.9E-12	
INORG	Vanadium	7440-62-2	7.3E-09	3.6E-10	1.1E-10	7.8E-09	6.1E-07	2.9E-10	6.0E-11	2.9E-11	3.8E-10	1.4E-09	1.4E-10	6.3E-11	1.6E-09	1.9E-10	4.9E-10	9.9E-10	1.7E-09	2.2E-10	1.1E-10	1.1E-10	1.4E-10	3.5E-10	1.3E-10
INORG	Zinc	7440-66-6	6.1E-08	1.2E-07	6.6E-08	2.5E-07	2.0E-05	2.4E-09	2.1E-08	1.7E-08	4.0E-08	1.2E-08	4.7E-08	3.7E-08	9.5E-08	1.6E-09	1.7E-07	5.7E-07	7.4E-07	7.2E-09	9.1E-10	3.6E-08	7.9E-08	1.2E-07	4.3E-09
TIC	Acetaldehyde	75-07-0																							
TIC	Acetophenone	98-86-2																							
TIC	Azobenzene	103-33-3																							
TIC	Butanol, 1-	71-36-3																							
TIC	Caprolactam	105-60-2																							
TIC	Chlorodifluoromethane	75-45-6																							
TIC	Cyclohexanone	108-94-1																							
TIC	Diethyl ether	60-29-7																							
TIC	Dioxane, 1,4-	123-91-1																							
TIC	Ethanol, 2-(2-butoxyethoxy)-	112-34-5																							
TIC	Hexane, n-	110-54-3		5.64E-12		5.64E-12			9.40E-13		9.40E-13		2.12E-12		2.12E-12		7.60E-12		7.60E-12			1.65E-12		1.65E-12	
TIC	Phenol, 4,4'-(1-methylethylide	80-05-7																							
TIC	Phthalic anhydride	85-44-9					3.22E-07													1.16E-10					6.96E-11

Table B-7b: Particulate Concentrations (mg/m^3) in Ambient Air from Soil - Hypothetical Future Land Use - Annual Average
ACS NPL Site, Griffith, Indiana

	Current/Future Scenario:		FUTURE					FUTURE						FUTURE						FUTURE				FUTURE				
	Location of Exposure:		AREA 1					AREA 2						AREA 3						AREA 4A				AREA 4B				
	Type of Activity at Emission Location:		Routine Industrial				Excavatio	Routine Industrial				Excavatio	Construction	Routine Industrial				Excavatio	Construction	Routine Industrial				Routine Industrial				Excavation
	Location of Emission:		From Area 1	From Area 2	From Area 3	Total At Area	At Area	From Area 1	From Area 2	From Area 3	Total At Area	At Area	At Area	From Area 1	From Area 2	From Area 3	Total At Area	At Area	At Area	From Area 1	From Area 2	From Area 3	Total At Area	From Area 1	From Area 2	From Area 3	Total At Area	At Area
	C/Q (kg/m^3 per kg/m^2/s)		1.2E+01	7.2E-01	8.3E-02		5.6E-01	8.2E-01	1.2E+01	5.5E-01		5.6E-01	3.3E+00	2.8E-01	1.6E+00	1.2E+01		5.6E-01	3.3E+00	4.7E-01	1.2E-01	2.1E-02		2.3E+00	2.7E-01	4.6E-02		5.6E-01
Analyte Group	Substance	CASRN	C_{air} (mg/m^3)	C_{air} (mg/m^3)	C_{air} (mg/m^3)	C_{air} (mg/m^3)	C_{air} (mg/m^3)	C_{air} (mg/m^3)	C_{air} (mg/m^3)	C_{air} (mg/m^3)	C_{air} (mg/m^3)	C_{air} (mg/m^3)	C_{air} (mg/m^3)	C_{air} (mg/m^3)	C_{air} (mg/m^3)	C_{air} (mg/m^3)	C_{air} (mg/m^3)	C_{air} (mg/m^3)	C_{air} (mg/m^3)	C_{air} (mg/m^3)	C_{air} (mg/m^3)	C_{air} (mg/m^3)	C_{air} (mg/m^3)	C_{air} (mg/m^3)	C_{air} (mg/m^3)	C_{air} (mg/m^3)	C_{air} (mg/m^3)	C_{air} (mg/m^3)
VOC	1,1,1-Trichloroethane	71-55-6	9.3E-07	5.1E-10	3.1E-09	9.4E-07	8.3E-05	6.4E-08	8.5E-09	2.1E-08	9.3E-08	7.6E-07	4.5E-06	2.2E-08	1.1E-09	4.5E-07	4.7E-07	4.0E-05	4.5E-06	3.7E-08	8.5E-11	7.9E-10	3.7E-08	1.8E-07	1.9E-10	1.7E-09	1.8E-07	
VOC	1,1,2,2-Tetrachloroethane	79-34-5	2.4E-09	1.4E-12		2.4E-09	2.2E-07	1.7E-10	2.3E-11		1.9E-10	2.0E-09	1.2E-08	5.7E-11	3.0E-12		6.0E-11		1.2E-08	9.6E-11	2.3E-13		9.6E-11	4.7E-10	5.1E-13		4.7E-10	
VOC	1,1,2-Trichloroethane	79-00-5	5.1E-09			5.1E-09	4.5E-07	3.5E-10			3.5E-10			1.2E-10			1.2E-10			2.0E-10			2.0E-10	9.7E-10			9.7E-10	
VOC	1,1-Dichloroethane	75-34-3	1.4E-08	4.5E-10	7.4E-12	1.4E-08	1.2E-06	9.4E-10	7.5E-09	4.9E-11	8.5E-09	6.6E-07	4.0E-06	3.2E-10	1.0E-09	1.1E-09	2.4E-09	9.4E-08	4.0E-06	5.4E-10	7.5E-11	1.9E-12	6.2E-10	2.6E-09	1.7E-10	4.1E-12	2.8E-09	
VOC	1,1-Dichloroethene	75-35-4																										
VOC	1,2,4-Trimethylbenzene	95-63-6																										
VOC	1,2-Dichloroethane	107-06-2	2.5E-08	2.5E-10	3.5E-12	2.5E-08	2.2E-06	1.7E-09	4.1E-09	2.3E-11	5.8E-09	3.6E-07	2.2E-06	5.9E-10	5.5E-10	5.1E-10	1.6E-09	4.5E-08	2.2E-06	9.8E-10	4.1E-11	8.9E-13	1.0E-09	4.8E-09	9.2E-11	1.9E-12	4.9E-09	
VOC	1,2-Dichloroethene (total)	540-59-0	1.5E-07	6.3E-10	1.1E-10	1.5E-07	1.3E-05	1.0E-08	1.1E-08	7.5E-10	2.2E-08	9.3E-07	5.6E-06	3.5E-09	1.4E-09	1.6E-08	2.1E-08	1.4E-06	5.6E-06	5.9E-09	1.1E-10	2.9E-11	6.0E-09	2.9E-08	2.4E-10	6.2E-11	2.9E-08	6.7E-10
VOC	1,2-Dichloropropane	78-87-5	1.4E-08	1.0E-10	2.4E-12	1.4E-08	1.2E-06	9.4E-10	1.7E-09	1.6E-11	2.7E-09	1.5E-07	9.0E-07	3.2E-10	2.3E-10	3.4E-10	8.9E-10	3.1E-08	9.0E-07	5.4E-10	1.7E-11	6.0E-13	5.6E-10	2.6E-09	3.8E-11	1.3E-12	2.7E-09	
VOC	1,3,5-Trimethylbenzene	108-67-8																										
VOC	2-Butanone	78-93-3	2.5E-07	1.9E-08	4.0E-08	3.1E-07	2.2E-05	1.7E-08	3.1E-07	2.7E-07	5.9E-07	2.8E-05	1.7E-04	5.8E-09	4.1E-08	5.8E-06	5.8E-06	5.1E-04	1.7E-04	9.8E-09	3.1E-09	1.0E-08	2.3E-08	4.8E-08	7.0E-09	2.2E-08	7.7E-08	
VOC	2-Hexanone	591-78-6		1.2E-09	1.7E-12	1.2E-09			2.0E-08	1.1E-11	2.0E-08	1.8E-06	1.1E-05		2.6E-09	2.4E-10	2.9E-09	2.2E-08	1.1E-05		2.0E-10	4.3E-13	2.0E-10		4.5E-10	9.4E-13	4.5E-10	
VOC	4-Methyl-2-pentanone	108-10-1	2.7E-07	3.1E-09	2.5E-08	2.9E-07	2.4E-05	1.8E-08	5.1E-08	1.6E-07	2.3E-07	4.5E-06	2.7E-05	6.2E-09	6.8E-09	3.6E-06	3.6E-06	3.2E-04	2.7E-05	1.0E-08	5.1E-10	6.3E-09	1.7E-08	5.1E-08	1.2E-09	1.4E-08	6.6E-08	
VOC	Acetone	67-64-1	2.5E-07	6.0E-09	1.4E-08	2.7E-07	2.2E-05	1.7E-08	1.0E-07	9.2E-08	2.1E-07	8.8E-06	5.3E-05	5.9E-09	1.3E-08	2.0E-06	2.0E-06	1.8E-04	5.3E-05	9.9E-09	1.0E-09	3.5E-09	1.4E-08	4.8E-08	2.2E-09	7.7E-09	5.8E-08	1.4E-09
VOC	Benzene	71-43-2	2.0E-07	5.8E-10	6.5E-10	2.0E-07	1.8E-05	1.4E-08	9.6E-09	4.3E-09	2.8E-08	8.5E-07	5.1E-06	4.8E-09	1.3E-09	9.4E-08	1.0E-07	8.4E-06	5.1E-06	8.0E-09	9.6E-11	1.7E-10	8.2E-09	3.9E-08	2.2E-10	3.6E-10	4.0E-08	
VOC	Bromodichloromethane	75-27-4																										
VOC	Carbon Disulfide	75-15-0																										
VOC	Carbon Tetrachloride	56-23-5																										
VOC	Chlorobenzene	108-90-7	6.3E-09		4.5E-10	6.7E-09	5.6E-07	4.3E-10		3.0E-09	3.4E-09			1.5E-10		6.5E-08	6.5E-08	5.8E-06		2.5E-10		1.1E-10	3.6E-10	1.2E-09		2.5E-10	1.5E-09	
VOC	Chloroethane	75-00-3																										
VOC	Chloroform	67-66-3	1.8E-07	7.1E-10	1.3E-14	1.8E-07	1.6E-05	1.2E-08	1.2E-08	8.6E-14	2.4E-08	1.0E-06	6.3E-06	4.3E-09	1.6E-09	1.9E-12	5.8E-09	1.7E-10	6.3E-06	7.2E-09	1.2E-10	3.3E-15	7.3E-09	3.5E-08	2.7E-10	7.2E-15	3.5E-08	
VOC	Chloromethane	74-87-3																										
VOC	Ethyl Benzene	100-41-4	3.7E-07	5.8E-09	1.0E-08	3.8E-07	3.3E-05	2.5E-08	9.6E-08	6.9E-08	1.9E-07	8.5E-06	5.1E-05	8.6E-09	1.3E-08	1.5E-06	1.5E-06	1.3E-04	5.1E-05	1.4E-08	9.6E-10	2.6E-09	1.8E-08	7.0E-08	2.2E-09	5.7E-09	7.8E-08	
VOC	Methylene Chloride	75-09-2	2.2E-07	5.6E-10	1.2E-11	2.2E-07	1.9E-05	1.5E-08	9.4E-09	7.8E-11	2.4E-08	8.3E-07	5.0E-06	5.1E-09	1.2E-09	1.7E-09	8.0E-09	1.5E-07	5.0E-06	8.6E-09	9.4E-11	3.0E-12	8.7E-09	4.2E-08	2.1E-10	6.5E-12	4.2E-08	
VOC	Styrene	100-42-5	5.6E-08	3.7E-10	1.1E-09	5.8E-08	5.0E-06	3.9E-09	6.2E-09	7.4E-09	1.7E-08	5.5E-07	3.3E-06	1.3E-09	8.3E-10	1.6E-07	1.6E-07	1.4E-05	3.3E-06	2.2E-09	6.2E-11	2.8E-10	2.6E-09	1.1E-08	1.4E-10	6.2E-10	1.2E-08	
VOC	Tetrachloroethene	127-18-4	4.6E-07	4.8E-09	1.9E-08	4.8E-07	4.1E-05	3.1E-08	8.0E-08	1.2E-07	2.4E-07	7.1E-06	4.3E-05	1.1E-08	1.1E-08	2.7E-06	2.7E-06	2.4E-04	4.3E-05	1.8E-08	8.0E-10	4.8E-09	2.4E-08	8.8E-08	1.8E-09	1.0E-08	1.0E-07	
VOC	Tetrahydrofuran	109-99-9																										
VOC	Toluene	108-88-3	7.7E-06	2.5E-08	6.8E-08	7.8E-06	6.8E-04	5.2E-07	4.2E-07	4.5E-07	1.4E-06	3.7E-05	2.2E-04	1.8E-07	5.6E-08	9.9E-06	1.0E-05	8.7E-04	2.2E-04	3.0E-07	4.2E-09	1.7E-08	3.2E-07	1.5E-06	9.5E-09	3.8E-08	1.5E-06	
VOC	Trichloroethene	79-01-6	2.1E-07	2.1E-09	7.8E-09	2.2E-07	1.9E-05	1.5E-08	3.5E-08	5.1E-08	1.0E-07	3.1E-06	1.8E-05	5.0E-09	4.6E-09	1.1E-06	1.1E-06	9.9E-05	1.8E-05	8.4E-09	3.5E-10	2.0E-09	1.1E-08	4.1E-08	7.8E-10	4.3E-09	4.6E-08	
VOC	Vinyl Chloride	75-01-4		4.1E-12		4.1E-12			6.9E-11		6.9E-11	6.1E-09	3.7E-08		9.2E-12		9.2E-12		3.7E-08		6.9E-13		6.9E-13		1.6E-12		1.6E-12	
VOC	Xylenes (total)	1330-20-7	1.8E-06	5.2E-08	5.6E-08	1.9E-06	1.6E-04	1.2E-07	8.6E-07	3.7E-07	1.4E-06	7.6E-05	4.6E-04	4.1E-08	1.2E-07	8.1E-06	8.3E-06	7.2E-04	4.6E-04	6.9E-08	8.6E-09	1.4E-08	9.1E-08	3.4E-07	1.9E-08	3.1E-08	3.9E-07	
VOC	cis-1,2-Dichloroethene	156-59-2	7.5E-07	8.7E-12	9.5E-14	7.5E-07	6.7E-05	5.1E-08	1.4E-10	6.3E-13	5.2E-08	1.3E-08	7.7E-08	1.8E-08	1.9E-11	1.4E-11	1.8E-08	1.2E-09	7.7E-08	2.9E-08	1.4E-12	2.4E-14	2.9E-08	1.4E-07	3.2E-12	5.3E-14	1.4E-07	
VOC	m,p-xylene	6777-61-2	1.0E-06	4.0E-11	4.8E-10	1.0E-06	8.9E-05	6.9E-08	6.7E-10	3.2E-09	7.3E-08	6.0E-08	3.6E-07	2.3E-08	9.0E-11	6.9E-08	9.3E-08	6.1E-06	3.6E-07	3.9E-08	6.7E-12	1.2E-10	4.0E-08	1.9E-07	1.5E-11	2.7E-10	1.9E-07	
VOC	ortho-xylene	95-47-6	2.0E-07	2.0E-11	1.8E-10	2.1E-07	1.8E-05	1.4E-08	3.4E-10	1.2E-09	1.6E-08	3.0E-08	1.8E-07	4.8E-09	4.5E-11	2.6E-08	3.1E-08	2.3E-06	1.8E-07	8.0E-09	3.4E-12	4.6E-11	8.1E-09	3.9E-08	7.7E-12	1.0E-10	3.9E-08	
VOC	p-Cymene	99-87-6																										
VOC	trans-1,2-Dichloroethene	156-60-5																										
SVOC	1,2,4-Trichlorobenzene	120-82-1	2.7E-09	3.4E-10		3.0E-09	2.4E-07	1.8E-10	5.7E-09		5.9E-09	5.0E-07	3.0E-06	6.3E-11	7.6E-10		8.2E-10		3.0E-06	1.1E-10	5.7E-11		1.6E-10	5.2E-10	1.3E-10		6.4E-10	
SVOC	1,2-Dichlorobenzene	95-50-1	9.5E-09	2.0E-09	1.1E-12	1.2E-08	8.5E-07	6.5E-10	3.4E-08	7.5E-12	3.4E-08	3.0E-06	1.8E-05	2.2E-10	4.5E-09	1.6E-10	4.9E-09	1.4E-08	1.8E-05	3.7E-10	3.4E-10	2.9E-13	7.1E-10	1.8E-09	7.6E-10	6.2E-13	2.6E-09	
SVOC	1,3-Dichlorobenzene	541-73-1	5.5E-10			5.5E-10	4.9E-08	3.8E-11			3.8E-11			1.3E-11			1.3E-11			2.2E-11			2.2E-11	1.1E-10			1.1E-10	
SVOC	1,4-Dichlorobenzene	106-46-7	3.3E-09	3.4E-11	4.0E-13	3.3E-09	2.9E-07	2.2E-10	5.7E-10	2.7E-12	8.0E-10	5.1E-08	3.0E-07	7.6E-11	7.6E-11	5.8E-11	2.1E-10	5.2E-09	3.0E-07	1.3E-10	5.7E-12	1.0E-13	1.3E-10	6.2E-10	1.3E-11	2.2E-13	6.4E-10	
SVOC	2,2'-oxybis(1-Chloropropane)	108-60-1																										
SVOC	2,4,5-Trichlorophenol	95-95-4																										
SVOC	2,4-Dichlorophenol	120-83-2	2.6E-09			2.6E-09	2.3E-07	1.8E-10			1.8E-10			6.0E-11			6.0E-11			1.0E-10			1.0E-10	4.9E-10			4.9E-10	
SVOC	2,4-Dimethylphenol	105-67-9	6.8E-09	1.2E-09	8.3E-11	8.1E-09	6.0E-07	4.6E-10	2.0E-08	5.5E-10	2.1E-08	1.8E-06	1.1E-05	1.6E-10	2.7E-09	1.2E-08	1.5E-08	1.1E-06	1.1E-05	2.7E-10	2.0E-10	2.1E-11	4.9E-10	1.3E-09	4.6E-10	4.6E-11	1.8E-09	
SVOC	2,4-Dinitrotoluene	121-14-2			3.6E-12	3.6E-12				2.4E-11	2.4E-11					5.3E-10	5.3E-10	4.7E-08				9.2E-13	9.2E-13			2.0E-12	2.0E-12	
SVOC	2,6-Dinitrotoluene	606-20-2		1.3E-10		1.3E-10			2.2E-09		2.2E-09	1.9E-07	1.2E-06		2.9E-10		2.9E-10		1.2E-06		2.2E-11		2.2E-11		4.9E-11		4.9E-11	
SVOC	2-Chloronaphthalene	91-58-7																										
SVOC	2-Methylnaphthalene	91-57-6	4.5E-08	2.0E-08	2.6E-10	6.5E-08	4.0E-06	3.1E-09	3.3E-07	1.7E-09	3.3E-07	2.9E-05	1.7E-04	1.1E-09	4.3E-08	3.7E-08	8.2E-08	3.3E-06	1.7E-04	1.8E-09	3.3E-09	6.5E-11	5.1E-09	8.6E-09	7.3E-09	1.4E-10	1.6E-08	1.7E-09
SVOC	2-Methylphenol	95-48-7	7.0E-09	1.4E-09	4.7E-11	8.5E-09	6.2E-07	4.8E-10	2.4E-08	3.1E-10	2.5E-08	2.1E-06	1.3E-05	1.6E-10	3.2E-09	6.9E-09	1.0E-08	6.1E-07	1.3E-05	2.7E-10	2.4E-10	1.2E-11	5.2E-10	1.3E-09	5.3E-10	2.6E-11	1.9E-09	
SVOC	3,3'-Dichlorobenzidine	91-94-1																										
SVOC	4-Bromophenyl-phenylether	101-55-3																										
SVOC	4-Chloro-3-methylphenol	59-50-7																										
SVOC	4-Chlorophenyl-phenyl ether	7005-72-3																										
SVOC	4-Methylphenol	106-44-5	7.9E-09	2.0E-09	4.4E-11	1.0E-08	7.0E-07	5.4E-10	3.3E-08	2.9E-10	3.4E-08	2.9E-06	1.8E-05	1.8E-10	4.4E-09	6.4E-09	1.1E-08	5.6E-07	1.8E-05	3.1E-10	3.3E-10	1.1E-11	6.5E-10	1.5E-09	7.5E-10	2.4E-11	2.3E-09	
SVOC	4-Nitrophenol	100-02-7			2.9E-13	2.9E-13				1.9E-12	1.9E-12					4.1E-11	4.1E-11	3.7E-09				7.2E-14	7.2E-14			1.6E-13	1.6E-13	
SVOC	Acenaphthene	83-32-9	6.9E-09	5.6E-10	3.1E-12	7.5E-09	6.1E-07	4.7E-10	9.4E-09	2.0E-11	9.9E-09	8.3E-07	5.0E-06	1.6E-10	1.3E-09	4.5E-10	1.9E-09	3.9E-08	5.0E-06	2.7E-10	9.4E-11	7.8E-13	3.6E-10	1.3E-09	2.1E-10	1.7E-12	1.5E-09	
SVOC	Acenaphthylene	208-96-8	3.4E-09			3.4E-09	3.1E-07	2.4E-10			2.4E-10			8.0E-11			8.0E-11			1.4E-10			1.4E-10	6.6E-10			6.6E-10	1.6E-08
SVOC	Anthracene	120-12-7	6.9E-10	4.9E-11	5.2E-12	7.4E-10	6.1E-08	4.7E-11	8.1E-10	3.4E-11	9.0E-10	7.2E-08	4.3E-07	1.6E-11	1.1E-10	7.5E-10	8.8E-10	6.7E-08	4.3E-07	2.7E-11	8.1E-12	1.3E-12	3.6E-11	1.3E-10	1.8E-11	2.9E-12	1.5E-10	1.4E-08
SVOC	Benzo(a)anthracene	56-55-3		1.0E-10	9.1E-12	1.1E-10			1.7E-09	6.0E-11	1.8E-09	1.5E-07	9.0E-07		2.3E-10	1.3E-09	1.5E-09	1.2E-07	9.0E-07		1.7E-11	2.3E-12	1.9E-11		3.8E-11	5.0E-12	4.3E-11	2.0E-08
SVOC	Benzo(a)pyrene	50-32-8		5.6E-11	6.1E-12	6.2E-11			9.4E-10	4.0E-11	9.8E-10	8.3E-08	5.0E-07		1.3E-10	8.8E-10	1.0E-09	7.8E-08	5.0E-07		9.4E-12	1.5E-12	1.1E-11		2.1E-11	3.4E-12	2.5E-11	2.2E-08
SVOC	Benzo(b)fluoranthene	205-99-2		2.0E-10	1.7E-11	2.2E-10			3.3E-09	1.1E-10	3.4E-09	2.9E-07	1.8E-06		4.4E-10	2.4E-09	2.9E-09	2.2E-07	1.8E-06		3.3E-11	4.3E-12	3.8E-11		7.5E-11	9.4E-12	8.4E-11	2.4E-08
SVOC	Benzo(g,h,i)perylene	191-24-2		5.6E-11	4.8E-12	6.1E-11			9.4E-10	3.2E-11	9.7E-10	8.3E-08	5.0E-07		1.3E-10	6.9E-10	8.1E-10	6.1E-08	5.0E-07		9.4E-12	1.2E-12	1.1E-11		2.1E-11	2.6E-12	2.4E-11	1.6E-08
SVOC	Benzo(k)fluoranthene	207-08-9		2.0E-10	1.7E-11	2.2E-10			3.3E-09	1.1E-10	3.4E-09	2.9E-07	1.8E-06		4.4E-10	2.4E-09	2.9E-09	2.2E-07	1.8E-06		3.3E-11	4.3E-12	3.8E-11		7.5E-11	9.4E-12	8.4E-11	2.3E-08
SVOC	Benzoic Acid	65-85-0	8.1E-09	4.5E-09	1.0E-09	1.4E-08	7.2E-07	5.6E-10	7.5E-08	6.6E-09	8.2E-08	6.7E-06	4.0E-05	1.9E-10	1.0E-08	1.4E-07	1.5E-07	1.3E-05	4.0E-05	3.2E-10	7.5E-10	2.5E-10	1.3E-09	1.6E-09	1.7E-09	5.5E-10	3.8E-09	
SVOC	Benzyl Alcohol	100-51-6		1.0E-09		1.0E-09			1.7E-08		1.7E-08	1.5E-06	8.8E-06		2.2E-09		2.2E-09		8.8E-06		1.7E-10		1.7E-10		3.7E-10		3.7E-10	
SVOC	Butylbenzylphthalate	85-68-7	7.9E-08	1.6E-08	1.5E-10	9.5E-08	7.0E-06	5.4E-09	2.6E-07	9.6E-10	2.7E-07	2.3E-05	1.4E-04	1.8E-09	3.5E-08	2.1E-08	5.8E-08	1.9E-06	1.4E-04	3.1E-09	2.6E-09	3.7E-11	5.8E-09	1.5E-08	5.9E-09	8.1E-11	2.1E-08	
SVOC	Carbazole	86-74-8																										2.0E-09
SVOC	Chrysene	218-01-9		1.4E-10	6.9E-12	1.5E-10			2.4E-09	4.6E-11	2.4E-09	2.1E-07	1.3E-06		3.2E-10	1.0E-09	1.3E-09	8.9E-08	1.3E-06		2.4E-11	1.8E-12	2.6E-11		5.4E-11	3.8E-12	5.7E-11	2.2E-08
SVOC	Di-n-butylphthalate	84-74-2	5.4E-08	2.8E-09	2.9E-10	5.7E-08	4.8E-06	3.7E-09	4.7E-08	1.9E-09	5.3E-08	4.2E-06	2.5E-05	1.3E-09	6.3E-09	4.2E-08	5.0E-08	3.7E-06	2.5E-05	2.1E-09	4.7E-10	7.4E-11	2.6E-09	1.0E-08	1.1E-09	1.6E-10	1.2E-08	4.7E-09
SVOC	Di-n-octylphthalate	117-84-0	6.3E-09	4.9E-10	6.9E-11	6.9E-09	5.6E-07	4.3E-10	8.1E-09	4.6E-10	9.0E-09	7.2E-07	4.3E-06	1.5E-10	1.1E-09	9.9E-09	1.1E-08	8.8E-07	4.3E-06	2.5E-10	8.1E-11	1.7E-11	3.5E-10	1.2E-09	1.8E-10	3.8E-11	1.4E-09	
SVOC	Dibenzo(a,h)anthracene	53-70-3			1.2E-12	1.2E-12				7.8E-12	7.8E-12					1.7E-10	1.7E-10	1.5E-08				3.0E-13	3.0E-13			6.5E-13	6.5E-13	1.6E-08
SVOC	Dibenzofuran	132-64-9	2.6E-09	9.4E-11	2.8E-12	2.7E-09	2.3E-07	1.8E-10	1.6E-09	1.8E-11	1.8E-09	1.4E-07	8.3E-07	6.1E-11	2.1E-10	4.0E-10	6.7E-10	3.6E-08	8.3E-07	1.0E-10	1.6E-11	7.0E-13	1.2E-10	5.0E-10	3.5E-11	1.5E-12	5.4E-10	

Table B-7b: Particulate Concentrations (mg/m^3) in Ambient Air from Soil - Hypothetical Future Land Use - Annual Average
ACS NPL Site, Griffith, Indiana

	Current/Future Scenario:		FUTURE						FUTURE						FUTURE							FUTURE					FUTURE				
	Location of Exposure:		AREA 1						AREA 2						AREA 3							AREA 4A					AREA 4B				
	Type of Activity at Emission Location:		Routine Industrial				Excavatio		Routine Industrial				Excavatio	Construction	Routine Industrial				Excavatio	Construction		Routine Industrial					Routine Industrial				Excavation
	Location of Emission:		From Area 1	From Area 2	From Area 3	Total At Area	At Area		From Area 1	From Area 2	From Area 3	Total At Area	At Area	At Area	From Area 1	From Area 2	From Area 3	Total At Area	At Area	At Area		From Area 1	From Area 2	From Area 3	Total At Area		From Area 1	From Area 2	From Area 3	Total At Area	At Area
	C/Q (kg/m^3 per $kg/m^2/s$)		1.2E+01	7.2E-01	8.3E-02		5.6E-01		8.2E-01	1.2E+01	5.5E-01		5.6E-01	3.3E+00	2.8E-01	1.6E+00	1.2E+01		5.6E-01	3.3E+00		4.7E-01	1.2E-01	2.1E-02			2.3E+00	2.7E-01	4.6E-02		5.6E-01
Analyte Group	Substance	CASRN	C_{air} (mg/m^3)	C_{air} (mg/m^3)	C_{air} (mg/m^3)	C_{air} (mg/m^3)	C_{air} (mg/m^3)		C_{air} (mg/m^3)	C_{air} (mg/m^3)	C_{air} (mg/m^3)	C_{air} (mg/m^3)	C_{air} (mg/m^3)	C_{air} (mg/m^3)	C_{air} (mg/m^3)	C_{air} (mg/m^3)	C_{air} (mg/m^3)	C_{air} (mg/m^3)	C_{air} (mg/m^3)	C_{air} (mg/m^3)		C_{air} (mg/m^3)	C_{air} (mg/m^3)	C_{air} (mg/m^3)	C_{air} (mg/m^3)		C_{air} (mg/m^3)	C_{air} (mg/m^3)	C_{air} (mg/m^3)	C_{air} (mg/m^3)	C_{air} (mg/m^3)
SVOC	Diethylphthalate	84-66-2	9.8E-09	9.3E-10	2.2E-11	1.1E-08	8.7E-07		6.7E-10	1.6E-08	1.4E-10	1.6E-08	1.4E-06	8.2E-06	2.3E-10	2.1E-09	3.1E-09	5.4E-09	2.8E-07	8.2E-06		3.8E-10	1.6E-10	5.5E-12	5.4E-10		1.9E-09	3.5E-10	1.2E-11	2.2E-09	
SVOC	Dimethylphthalate	131-11-3	3.4E-08	9.8E-09	4.5E-11	4.4E-08	3.0E-06		2.3E-09	1.6E-07	3.0E-10	1.7E-07	1.4E-05	8.7E-05	7.9E-10	2.2E-08	6.5E-09	2.9E-08	5.7E-07	8.7E-05		1.3E-09	1.6E-09	1.1E-11	3.0E-09		6.5E-09	3.7E-09	2.5E-11	1.0E-08	
SVOC	Fluoranthene	206-44-0	2.4E-09	1.5E-10	2.6E-11	2.6E-09	2.1E-07		1.6E-10	2.6E-09	1.8E-10	2.9E-09	2.3E-07	1.4E-06	5.6E-11	3.4E-10	3.8E-09	4.2E-09	3.4E-07	1.4E-06		9.3E-11	2.6E-11	6.7E-12	1.3E-10		4.6E-10	5.8E-11	1.5E-11	5.3E-10	2.2E-08
SVOC	Fluorene	86-73-7	6.6E-09	6.7E-10	4.2E-12	7.3E-09	5.8E-07		4.5E-10	1.1E-08	2.8E-11	1.2E-08	9.9E-07	5.9E-06	1.5E-10	1.5E-09	6.1E-10	2.3E-09	5.4E-08	5.9E-06		2.6E-10	1.1E-10	1.1E-12	3.7E-10		1.3E-09	2.5E-10	2.4E-12	1.5E-09	
SVOC	Hexachlorobenzene	118-74-1																													
SVOC	Hexachlorobutadiene	87-68-3	3.8E-09	5.1E-10		4.3E-09	3.3E-07		2.6E-10	8.6E-09		8.8E-09	7.6E-07	4.6E-06	8.8E-11	1.1E-09		1.2E-09		4.6E-06		1.5E-10	8.6E-11		2.3E-10		7.2E-10	1.9E-10		9.2E-10	
SVOC	Indeno(1,2,3-cd)pyrene	193-39-5		5.3E-11	3.6E-12	5.6E-11				8.8E-10	2.4E-11	9.0E-10	7.8E-08	4.7E-07		1.2E-10	5.1E-10	6.3E-10	4.6E-08	4.7E-07			8.8E-12	9.0E-13	9.7E-12			2.0E-11	2.0E-12	2.2E-11	1.9E-08
SVOC	Isophorone	78-59-1	1.3E-07	8.7E-09	2.6E-09	1.5E-07	1.2E-05		9.2E-09	1.4E-07	1.7E-08	1.7E-07	1.3E-05	7.7E-05	3.1E-09	1.9E-08	3.8E-07	4.0E-07	3.4E-05	7.7E-05		5.3E-09	1.4E-09	6.6E-10	7.4E-09		2.6E-08	3.2E-09	1.5E-09	3.1E-08	2.3E-09
SVOC	N-Nitroso-di-n-propylamine	621-64-7																													
SVOC	N-Nitrosodiphenylamine	86-30-6			8.2E-12	8.2E-12					5.5E-11	5.5E-11					1.2E-09	1.2E-09	1.1E-07					2.1E-12	2.1E-12				4.6E-12	4.6E-12	
SVOC	Naphthalene	91-20-3	7.2E-08	3.8E-09	5.5E-10	7.7E-08	6.4E-06		5.0E-09	6.4E-08	3.6E-09	7.2E-08	5.6E-06	3.4E-05	1.7E-09	8.5E-09	8.0E-08	9.0E-08	7.1E-06	3.4E-05		2.8E-09	6.4E-10	1.4E-10	3.6E-09		1.4E-08	1.4E-09	3.1E-10	1.6E-08	1.4E-09
SVOC	Pentachlorophenol	87-86-5	1.2E-08	1.7E-09	6.9E-11	1.4E-08	1.1E-06		8.4E-10	2.9E-08	4.6E-10	3.0E-08	2.6E-06	1.5E-05	2.9E-10	3.9E-09	1.0E-08	1.4E-08	8.9E-07	1.5E-05		4.8E-10	2.9E-10	1.8E-11	7.9E-10		2.4E-09	6.5E-10	3.8E-11	3.0E-09	
SVOC	Phenanthrene	85-01-8	5.7E-09	6.7E-10	2.8E-11	6.4E-09	5.0E-07		3.9E-10	1.1E-08	1.8E-10	1.2E-08	9.8E-07	5.9E-06	1.3E-10	1.5E-09	4.0E-09	5.6E-09	3.6E-07	5.9E-06		2.2E-10	1.1E-10	7.0E-12	3.4E-10		1.1E-09	2.5E-10	1.5E-11	1.4E-09	8.3E-09
SVOC	Phenol	108-95-2	1.3E-08	2.1E-09	8.9E-10	1.6E-08	1.2E-06		9.0E-10	3.4E-08	5.9E-09	4.1E-08	3.1E-06	1.8E-05	3.1E-10	4.6E-09	1.3E-07	1.3E-07	1.1E-05	1.8E-05		5.1E-10	3.4E-10	2.3E-10	1.1E-09		2.5E-09	7.8E-10	4.9E-10	3.8E-09	
SVOC	Pyrene	129-00-0	3.7E-09	3.0E-10	1.8E-11	4.0E-09	3.3E-07		2.5E-10	5.0E-09	1.2E-10	5.4E-09	4.4E-07	2.7E-06	8.6E-11	6.7E-10	2.6E-09	3.4E-09	2.3E-07	2.7E-06		1.4E-10	5.0E-11	4.6E-12	2.0E-10		7.1E-10	1.1E-10	1.0E-11	8.3E-10	2.1E-08
SVOC	bis(2-Chloroethyl) ether	111-44-4	6.4E-09	7.1E-10		7.1E-09	5.6E-07		4.3E-10	1.2E-08		1.2E-08	1.0E-06	6.3E-06	1.5E-10	1.6E-09		1.7E-09		6.3E-06		2.5E-10	1.2E-10		3.7E-10		1.2E-09	2.7E-10		1.5E-09	
SVOC	bis(2-Ethylhexyl)phthalate	117-81-7	2.1E-07	1.3E-08	6.7E-09	2.3E-07	1.8E-05		1.4E-08	2.1E-07	4.4E-08	2.7E-07	1.9E-05	1.1E-04	4.8E-09	2.9E-08	9.6E-07	1.0E-06	8.6E-05	1.1E-04		8.1E-09	2.1E-09	1.7E-09	1.2E-08		4.0E-08	4.8E-09	3.7E-09	4.8E-08	2.2E-07
P/PCB	4,4'-DDD	72-54-8	2.3E-09	5.5E-11		2.3E-09	2.0E-07		1.5E-10	9.1E-10		1.1E-09	8.1E-08	4.9E-07	5.3E-11	1.2E-10		1.7E-10		4.9E-07		8.8E-11	9.1E-12		9.8E-11		4.3E-10	2.1E-11		4.5E-10	4.3E-09
P/PCB	4,4'-DDE	72-55-9		3.3E-11		3.3E-11				5.5E-10		5.5E-10	4.9E-08	2.9E-07		7.4E-11		7.4E-11		2.9E-07			5.5E-12		5.5E-12			1.2E-11		1.2E-11	1.6E-08
P/PCB	4,4'-DDT	50-29-3	3.0E-09	4.7E-11		3.1E-09	2.7E-07		2.1E-10	7.8E-10		9.9E-10	6.9E-08	4.2E-07	7.0E-11	1.0E-10		1.7E-10		4.2E-07		1.2E-10	7.8E-12		1.3E-10		5.8E-10	1.8E-11		5.9E-10	1.3E-08
P/PCB	Aldrin	309-00-2		2.3E-10		2.3E-10				3.8E-09		3.8E-09	3.4E-07	2.0E-06		5.0E-10		5.0E-10		2.0E-06			3.8E-11		3.8E-11			8.5E-11		8.5E-11	
P/PCB	Aroclor-1242	3469-21-9	1.9E-08		1.3E-10	1.9E-08	1.7E-06		1.3E-09		8.4E-10	2.2E-09			4.5E-10		1.8E-08	1.9E-08	1.6E-06			7.5E-10		3.2E-11	7.9E-10		3.7E-09		7.0E-11	3.8E-09	
P/PCB	Aroclor-1248	2672-29-6	1.3E-08	1.9E-09	6.9E-11	1.5E-08	1.2E-06		9.0E-10	3.1E-08	4.6E-10	3.2E-08	2.8E-06	1.7E-05	3.1E-10	4.1E-09	9.9E-09	1.4E-08	8.8E-07	1.7E-05		5.2E-10	3.1E-10	1.7E-11	8.4E-10		2.5E-09	7.0E-10	3.8E-11	3.3E-09	1.2E-08
P/PCB	Aroclor-1254	1097-69-1	2.2E-08	1.4E-09	4.1E-11	2.3E-08	1.9E-06		1.5E-09	2.3E-08	2.7E-10	2.4E-08	2.0E-06	1.2E-05	5.1E-10	3.0E-09	6.0E-09	9.5E-09	5.3E-07	1.2E-05		8.6E-10	2.3E-10	1.0E-11	1.1E-09		4.2E-09	5.1E-10	2.3E-11	4.7E-09	4.9E-07
P/PCB	Aroclor-1260	1096-82-5	1.4E-08	1.3E-08	2.8E-11	2.7E-08	1.2E-06		9.4E-10	2.2E-07	1.9E-10	2.2E-07	1.9E-05	1.2E-04	3.2E-10	2.9E-08	4.1E-09	3.3E-08	3.6E-07	1.2E-04		5.4E-10	2.2E-09	7.1E-12	2.7E-09		2.6E-09	4.9E-09	1.6E-11	7.5E-09	5.4E-08
P/PCB	Dieldrin	60-57-1	1.5E-10			1.5E-10	1.3E-08		1.0E-11			1.0E-11			3.5E-12			3.5E-12				5.9E-12			5.9E-12		2.9E-11			2.9E-11	
P/PCB	Endosulfan I	959-98-8	7.5E-10			7.5E-10	6.7E-08		5.1E-11			5.1E-11			1.8E-11			1.8E-11			2.9E-11			2.9E-11		1.4E-10			1.4E-10	2.2E-08
P/PCB	Endosulfan sulfate	1031-07-8																													3.3E-09
P/PCB	Endrin	72-20-8	1.0E-09			1.0E-09	8.9E-08		6.9E-11			6.9E-11			2.3E-11			2.3E-11			3.9E-11			3.9E-11		1.9E-10			1.9E-10	8.3E-09
P/PCB	Endrin aldehyde	7421-93-4																													
P/PCB	Endrin ketone	3494-70-5																													
P/PCB	Heptachlor	76-44-8																													3.4E-09
P/PCB	Heptachlor epoxide	1024-57-3																													
P/PCB	Methoxychlor	72-43-5																													1.6E-08
P/PCB	alpha-BHC	319-84-6		1.2E-11		1.2E-11				2.1E-10		2.1E-10	1.8E-08	1.1E-07		2.8E-11		2.8E-11		1.1E-07			2.1E-12		2.1E-12			4.7E-12		4.7E-12	
P/PCB	alpha-Chlordane	5103-71-9																													1.2E-08
P/PCB	beta-BHC	319-85-7		2.4E-11		2.4E-11				3.9E-10		3.9E-10	3.5E-08	2.1E-07		5.3E-11		5.3E-11		2.1E-07			3.9E-12		3.9E-12			8.9E-12		8.9E-12	1.4E-09
P/PCB	gamma-BHC	58-89-9																													1.6E-09
P/PCB	gamma-Chlordane	5103-74-2	7.5E-10			7.5E-10	6.7E-08		5.1E-11			5.1E-11			1.8E-11			1.8E-11			2.9E-11			2.9E-11		1.4E-10			1.4E-10	2.7E-09
INORG	Antimony	7440-36-0	1.0E-08	2.5E-09	6.6E-10	1.3E-08	9.0E-07		6.9E-10	4.1E-08	4.4E-09	4.6E-08	3.6E-06	2.2E-05	2.4E-10	5.5E-09	9.5E-08	1.0E-07	8.4E-06	2.2E-05		4.0E-10	4.1E-10	1.7E-10	9.7E-10		1.9E-09	9.2E-10	3.7E-10	3.2E-09	
INORG	Arsenic	7440-38-2	2.7E-09	1.8E-10	1.6E-11	2.9E-09	2.4E-07		1.8E-10	3.0E-09	1.1E-10	3.3E-09	2.7E-07	1.6E-06	6.3E-11	4.1E-10	2.3E-09	2.8E-09	2.1E-07	1.6E-06		1.1E-10	3.0E-11	4.1E-12	1.4E-10		5.2E-10	6.9E-11	8.9E-12	5.9E-10	4.2E-07
INORG	Barium	7440-39-3	1.5E-07	3.7E-08	1.1E-08	1.9E-07	1.3E-05		1.0E-08	6.1E-07	7.0E-08	6.9E-07	5.4E-05	3.2E-04	3.4E-09	8.1E-08	1.5E-06	1.6E-06	1.3E-04	3.2E-04		5.7E-09	6.1E-09	2.7E-09	1.4E-08		2.8E-08	1.4E-08	5.8E-09	4.8E-08	
INORG	Beryllium	7440-41-7	1.3E-10	1.2E-11	1.7E-12	1.4E-10	1.1E-08		8.9E-12	2.0E-10	1.1E-11	2.2E-10	1.7E-08	1.0E-07	3.0E-12	2.6E-11	2.5E-10	2.7E-10	2.2E-08	1.0E-07		5.1E-12	2.0E-12	4.3E-13	7.5E-12		2.5E-11	4.4E-12	9.4E-13	3.0E-11	
INORG	Cadmium	7440-43-9	9.2E-09	4.0E-09	1.8E-09	1.5E-08	8.1E-07		6.3E-10	6.6E-08	1.2E-08	7.9E-08	5.9E-06	3.5E-05	2.1E-10	8.9E-09	2.6E-07	2.7E-07	2.3E-05	3.5E-05		3.6E-10	6.6E-10	4.6E-10	1.5E-09		1.8E-09	1.5E-09	1.0E-09	4.3E-09	3.3E-07
INORG	Chromium 3+	6065-83-1	1.0E-07	4.8E-08	5.2E-09	1.6E-07	9.1E-06		7.0E-09	8.0E-07	3.4E-08	8.4E-07	7.0E-05	4.2E-04	2.4E-09	1.1E-07	7.5E-07	8.6E-07	6.7E-05	4.2E-04		4.0E-09	8.0E-09	1.3E-09	1.3E-08		2.0E-08	1.8E-08	2.9E-09	4.0E-08	1.6E-06
INORG	Chromium 6+	8540-29-9	1.7E-08	8.0E-09	8.7E-10	2.6E-08	1.5E-06		1.2E-09	1.3E-07	5.7E-09	1.4E-07	1.2E-05	7.0E-05	4.0E-10	1.8E-08	1.3E-07	1.4E-07	1.1E-05	7.0E-05		6.7E-10	1.3E-09	2.2E-10	2.2E-09		3.3E-09	3.0E-09	4.8E-10	6.7E-09	2.6E-07
INORG	Cobalt	7440-48-4	6.6E-09	5.3E-10	2.1E-10	7.4E-09	5.9E-07		4.5E-10	8.9E-09	1.4E-09	1.1E-08	7.9E-07	4.7E-06	1.6E-10	1.2E-09	3.0E-08	3.1E-08	2.6E-06	4.7E-06		2.6E-10	8.9E-11	5.2E-11	4.0E-10		1.3E-09	2.0E-10	1.1E-10	1.6E-09	
INORG	Copper	7440-50-8	4.1E-08	5.0E-08	8.5E-09	9.9E-08	3.6E-06		2.8E-09	8.3E-07	5.7E-08	8.9E-07	7.3E-05	4.4E-04	9.5E-10	1.1E-07	1.2E-06	1.3E-06	1.1E-04	4.4E-04		1.6E-09	8.3E-09	2.2E-09	1.2E-08		7.8E-09	1.9E-08	4.7E-09	3.1E-08	2.1E-06
INORG	Cyanide (total)	57-12-5	6.0E-09		1.2E-10	6.1E-09	5.3E-07		4.1E-10		8.1E-10	1.2E-09			1.4E-10		1.8E-08	1.8E-08	1.6E-06			2.3E-10		3.1E-11	2.6E-10		1.1E-09		6.8E-11	1.2E-09	
INORG	Lead	7439-92-1	5.3E-07	3.8E-07	2.9E-08	9.4E-07	4.7E-05		3.6E-08	6.4E-06	1.9E-07	6.6E-06	5.7E-04	3.4E-03	1.2E-08	8.5E-07	4.2E-06	5.1E-06	3.7E-04	3.4E-03		2.1E-08	6.4E-08	7.4E-09	9.2E-08		1.0E-07	1.4E-07	1.6E-08	2.6E-07	8.0E-06
INORG	Manganese	7439-96-5	2.3E-07	8.9E-09	2.9E-09	2.4E-07	2.0E-05		1.6E-08	1.5E-07	1.9E-08	1.8E-07	1.3E-05	7.9E-05	5.3E-09	2.0E-08	4.1E-07	4.4E-07	3.7E-05	7.9E-05		8.9E-09	1.5E-09	7.2E-10	1.1E-08		4.4E-08	3.3E-09	1.6E-09	4.9E-08	
INORG	Mercury	7439-97-6	1.4E-09	3.0E-10	4.5E-11	1.8E-09	1.3E-07		9.9E-11	4.9E-09	3.0E-10	5.3E-09	4.4E-07	2.6E-06	3.4E-11	6.6E-10	6.5E-09	7.2E-09	5.8E-07	2.6E-06		5.7E-11	4.9E-11	1.1E-11	1.2E-10		2.8E-10	1.1E-10	2.5E-11	4.1E-10	2.5E-08
INORG	Nickel	7440-02-0	5.4E-09	9.3E-10	2.4E-10	6.6E-09	4.8E-07		3.7E-10	1.5E-08	1.6E-09	1.7E-08	1.4E-06	8.2E-06	1.3E-10	2.1E-09	3.5E-08	3.7E-08	3.1E-06	8.2E-06		2.1E-10	1.5E-10	6.1E-11	4.3E-10		1.0E-09	3.5E-10	1.3E-10	1.5E-09	
INORG	Selenium	7782-49-2	3.8E-10	1.0E-10	1.6E-10	6.5E-10	3.3E-08		2.6E-11	1.7E-09	1.1E-09	2.8E-09	1.5E-07	9.2E-07	8.8E-12	2.3E-10	2.4E-08	2.4E-08	2.1E-06	9.2E-07		1.5E-11	1.7E-11	4.1E-11	7.4E-11		7.2E-11	3.9E-11	9.1E-11	2.0E-10	
INORG	Silver	7440-22-4		3.7E-10	3.5E-10	7.2E-10				6.2E-09	2.3E-09	8.5E-09	5.5E-07	3.3E-06		8.2E-10	5.1E-08	5.1E-08	4.5E-06	3.3E-06			6.2E-11	8.9E-11	1.5E-10			1.4E-10	1.9E-10	3.3E-10	
INORG	Thallium	7440-28-0		2.7E-11	3.5E-12	3.1E-11				4.5E-10	2.3E-11	4.8E-10	4.0E-08	2.4E-07		6.0E-11	5.0E-10	5.6E-10	4.4E-08	2.4E-07			4.5E-12	8.7E-13	5.4E-12			1.0E-11	1.9E-12	1.2E-11	
INORG	Vanadium	7440-62-2	6.9E-09	3.6E-10	8.2E-11	7.4E-09	6.1E-07		4.7E-10	6.0E-09	5.4E-10	7.0E-09	5.3E-07	3.2E-06	1.6E-10	8.0E-10	1.2E-08	1.3E-08	1.0E-06	3.2E-06		2.7E-10	6.0E-11	2.1E-11	3.5E-10		1.3E-09	1.4E-10	4.5E-11	1.5E-09	
INORG	Zinc	7440-66-6	2.3E-07	1.2E-07	6.9E-08	4.2E-07	2.0E-05		1.5E-08	2.1E-06	4.5E-07	2.5E-06	1.8E-04	1.1E-03	5.3E-09	2.8E-07	9.9E-06	1.0E-05	8.8E-04	1.1E-03		8.8E-09	2.1E-08	1.7E-08	4.7E-08		4.3E-08	4.7E-08	3.8E-08	1.3E-07	1.7E-05
TIC	Acetaldehyde	75-07-0																													
TIC	Acetophenone	98-86-2																													
TIC	Azobenzene	103-33-3																													
TIC	Butanol, 1-	71-36-3																													
TIC	Caprolactam	105-60-2																													
TIC	Chlorodifluoromethane	75-45-6																													
TIC	Cyclohexanone	108-94-1																													
TIC	Diethyl ether	60-29-7																													
TIC	Dioxane, 1,4-	123-91-1																													
TIC	Ethanol, 2-(2-butoxyethoxy)-	112-34-5																													
TIC	Hexane, n-	110-54-3		5.6E-12		5.6E-12				9.4E-11		9.4E-11	8.3E-09	5.0E-08		1.2E-11		1.2E-11		5.0E-08			9.4E-13		9.4E-13			2.1E-12		2.1E-12	
TIC	Phenol, 4,4'-(1-methylethylide	80-05-7																													
TIC	Phthalic anhydride	85-44-9	3.6E-09			3.6E-09	3.2E-07		2.4E-10			2.4E-10			8.4E-11			8.4E-11			1.4E-10			1.4E-10	6.9E-10				6.9E-10	

Table B-7b (cont.): Particulate Concentrations (mg/m^3) in Ambient Air from Soil - Hypothetical Future Land Use
ACS NPL Site, Griffith, Indiana

	Current/Future Scenario:		FUTURE													FUTURE												
	Location of Exposure:		AREA 5A				Area 5A									AREA 6				Area 6								
	Type of Activity at Emission Location:		Routine Industrial				Excavation					Construction				Routine Industrial				Excavation					Construction			
	Location of Emission:		From Area 1	From Area 2	From Area 3	Total At Area	From Area 1	From Area 2	From Area 3	From Area 4B	Max	From Area 2	From Area 3	Max		From Area 1	From Area 2	From Area 3	Total At Area	From Area 1	From Area 2	From Area 3	From Area 4B	Max	From Area 2	From Area 3	Max	
	C/Q (kg/m^3 per kg/m^2/s)		3.2E-01	9.7E-01	7.2E-01		2.0E-04	8.0E-04	1.7E-03	9.6E-05		3.3E-02	5.8E-02			1.8E-01	2.1E-01	1.0E-01		1.2E-04	2.0E-04	3.9E-04	7.7E-05		8.9E-03	1.7E-02		
Analyte Group	Substance	CASRN	C_{air} (mg/m^3)	C_{air} (mg/m^3)	C_{air} (mg/m^3)	C_{air} (mg/m^3)	C_{air} (mg/m^3)	C_{air} (mg/m^3)	C_{air} (mg/m^3)	C_{air} (mg/m^3)	C_{air} (mg/m^3)	C_{air} (mg/m^3)	C_{air} (mg/m^3)	C_{air} (mg/m^3)		C_{air} (mg/m^3)	C_{air} (mg/m^3)	C_{air} (mg/m^3)	C_{air} (mg/m^3)	C_{air} (mg/m^3)	C_{air} (mg/m^3)	C_{air} (mg/m^3)	C_{air} (mg/m^3)	C_{air} (mg/m^3)	C_{air} (mg/m^3)	C_{air} (mg/m^3)	C_{air} (mg/m^3)	
VOC	1,1,1-Trichloroethane	71-55-6	2.5E-08	6.9E-10	2.7E-08	5.3E-08	3.0E-08	1.1E-09	1.2E-07		1.2E-07	4.5E-08	4.2E-06	4.2E-06		1.4E-08	1.5E-10	3.8E-09	1.8E-08	1.8E-08	2.7E-10	2.8E-08		2.8E-08	1.2E-08	1.2E-06	1.2E-06	
VOC	1,1,2,2-Tetrachloroethane	79-34-5	6.5E-11	1.8E-12		6.7E-11	7.8E-11	2.9E-12			7.8E-11	1.2E-10		1.2E-10		3.7E-11	3.9E-13		3.7E-11	4.7E-11	7.2E-13			4.7E-11	3.2E-11		3.2E-11	
VOC	1,1,2-Trichloroethane	79-00-5	1.4E-10			1.4E-10	1.6E-10				1.6E-10					7.6E-11			7.6E-11	9.7E-11				9.7E-11				
VOC	1,1-Dichloroethane	75-34-3	3.7E-10	6.1E-10	6.4E-11	1.0E-09	4.4E-10	9.6E-10	2.9E-10		9.6E-10	3.9E-08	9.9E-09	3.9E-08		2.1E-10	1.3E-10	8.9E-12	3.5E-10	2.6E-10	2.4E-10	6.6E-11		2.6E-10	1.1E-08	2.9E-09	1.1E-08	
VOC	1,1-Dichloroethene	75-35-4																										
VOC	1,2,4-Trimethylbenzene	95-63-6																										
VOC	1,2-Dichloroethane	107-06-2	6.7E-10	3.3E-10	3.0E-11	1.0E-09	8.0E-10	5.2E-10	1.4E-10		8.0E-10	2.2E-08	4.7E-09	2.2E-08		3.8E-10	7.2E-11	4.2E-12	4.5E-10	4.8E-10	1.3E-10	3.2E-11		4.8E-10	5.8E-09	1.4E-09	5.8E-09	
VOC	1,2-Dichloroethene (total)	540-59-0	4.0E-09	8.5E-10	9.8E-10	5.8E-09	4.8E-09	1.3E-09	4.4E-09	1.2E-13	4.8E-09	5.5E-08	1.5E-07	1.5E-07		2.3E-09	1.8E-10	1.4E-10	2.6E-09	2.9E-09	3.4E-10	1.0E-09	9.2E-14	2.9E-09	1.5E-08	4.4E-08	4.4E-08	
VOC	1,2-Dichloropropane	78-87-5	3.7E-10	1.4E-10	2.1E-11	5.3E-10	4.4E-10	2.2E-10	9.4E-11		4.4E-10	8.9E-09	3.2E-09	8.9E-09		2.1E-10	3.0E-11	2.9E-12	2.4E-10	2.6E-10	5.4E-11	2.1E-11		2.6E-10	2.4E-09	9.4E-10	2.4E-09	
VOC	1,3,5-Trimethylbenzene	108-67-8																										
VOC	2-Butanone	78-93-3	6.7E-09	2.5E-08	3.5E-07	3.8E-07	8.0E-09	4.0E-08	1.6E-06		1.6E-06	1.6E-06	5.4E-05	5.4E-05		3.7E-09	5.4E-09	4.8E-08	5.7E-08	4.8E-09	9.9E-09	3.6E-07		3.6E-07	4.4E-07	1.6E-05	1.6E-05	
VOC	2-Hexanone	591-78-6		1.6E-09	1.5E-11	1.6E-09		2.5E-09	6.6E-11		2.5E-09	1.0E-07	2.3E-09	1.0E-07			3.5E-10	2.0E-12	3.5E-10		6.3E-10	1.5E-11		6.3E-10	2.8E-08	6.6E-10	2.8E-08	
VOC	4-Methyl-2-pentanone	108-10-1	7.1E-09	4.1E-09	2.2E-07	2.3E-07	8.5E-09	6.6E-09	9.7E-07		9.7E-07	2.7E-07	3.3E-05	3.3E-05		4.0E-09	9.0E-10	3.0E-08	3.5E-08	5.1E-09	1.6E-09	2.2E-07		2.2E-07	7.3E-08	9.7E-06	9.7E-06	
VOC	Acetone	67-64-1	6.7E-09	8.1E-09	1.2E-07	1.4E-07	8.1E-09	1.3E-08	5.5E-07	2.4E-13	5.5E-07	5.3E-07	1.9E-05	1.9E-05		3.8E-09	1.7E-09	1.7E-08	2.2E-08	4.8E-09	3.2E-09	1.3E-07	1.9E-13	1.3E-07	1.4E-07	5.5E-06	5.5E-06	
VOC	Benzene	71-43-2	5.4E-09	7.8E-10	5.7E-09	1.2E-08	6.5E-09	1.2E-09	2.6E-08		2.6E-08	5.1E-08	8.7E-07	8.7E-07		3.1E-09	1.7E-10	7.9E-10	4.0E-09	3.9E-09	3.1E-10	5.9E-09		5.9E-09	1.4E-08	2.6E-07	2.6E-07	
VOC	Bromodichloromethane	75-27-4																										
VOC	Carbon Disulfide	75-15-0																										
VOC	Carbon Tetrachloride	56-23-5																										
VOC	Chlorobenzene	108-90-7	1.7E-10		3.9E-09	4.1E-09	2.0E-10		1.8E-08		1.8E-08		6.0E-07	6.0E-07		9.4E-11		5.4E-10	6.4E-10	1.2E-10		4.1E-09		4.1E-09		1.8E-07	1.8E-07	
VOC	Chloroethane	75-00-3																										
VOC	Chloroform	67-66-3	4.9E-09	9.6E-10	1.1E-13	5.8E-09	5.8E-09	1.5E-09	5.1E-13		5.8E-09	6.2E-08	1.7E-11	6.2E-08		2.7E-09	2.1E-10	1.6E-14	2.9E-09	3.5E-09	3.8E-10	1.2E-13		3.5E-09	1.7E-08	5.1E-12	1.7E-08	
VOC	Chloromethane	74-87-3																										
VOC	Ethyl Benzene	100-41-4	9.8E-09	7.8E-09	9.0E-08	1.1E-07	1.2E-08	1.2E-08	4.1E-07		4.1E-07	5.1E-07	1.4E-05	1.4E-05		5.5E-09	1.7E-09	1.2E-08	2.0E-08	7.0E-09	3.1E-09	9.3E-08		9.3E-08	1.4E-07	4.1E-06	4.1E-06	
VOC	Methylene Chloride	75-09-2	5.8E-09	7.6E-10	1.0E-10	6.7E-09	7.0E-09	1.2E-09	4.6E-10		7.0E-09	4.9E-08	1.6E-08	4.9E-08		3.3E-09	1.6E-10	1.4E-11	3.5E-09	4.2E-09	3.0E-10	1.1E-10		4.2E-09	1.3E-08	4.6E-09	1.3E-08	
VOC	Styrene	100-42-5	1.5E-09	5.0E-10	9.7E-09	1.2E-08	1.8E-09	7.9E-10	4.4E-08		4.4E-08	3.3E-08	1.5E-06	1.5E-06		8.5E-10	1.1E-10	1.3E-09	2.3E-09	1.1E-09	2.0E-10	1.0E-08		1.0E-08	8.8E-09	4.4E-07	4.4E-07	
VOC	Tetrachloroethene	127-18-4	1.2E-08	6.5E-09	1.6E-07	1.8E-07	1.5E-08	1.0E-08	7.4E-07		7.4E-07	4.2E-07	2.5E-05	2.5E-05		6.9E-09	1.4E-09	2.3E-08	3.1E-08	8.8E-09	2.6E-09	1.7E-07		1.7E-07	1.1E-07	7.4E-06	7.4E-06	
VOC	Tetrahydrofuran	109-99-9																										
VOC	Toluene	108-88-3	2.0E-07	3.4E-08	5.9E-07	8.3E-07	2.4E-07	5.4E-08	2.7E-06		2.7E-06	2.2E-06	9.1E-05	9.1E-05		1.1E-07	7.4E-09	8.2E-08	2.0E-07	1.5E-07	1.3E-08	6.1E-07		6.1E-07	6.0E-07	2.7E-05	2.7E-05	
VOC	Trichloroethene	79-01-6	5.7E-09	2.8E-09	6.7E-08	7.6E-08	6.8E-09	4.4E-09	3.0E-07		3.0E-07	1.8E-07	1.0E-05	1.0E-05		3.2E-09	6.0E-10	9.3E-09	1.3E-08	4.1E-09	1.1E-09	7.0E-08		7.0E-08	4.9E-08	3.0E-06	3.0E-06	
VOC	Vinyl Chloride	75-01-4		5.6E-12		5.6E-12		8.8E-12			8.8E-12	3.6E-10		3.6E-10			1.2E-12		1.2E-12		2.2E-12			2.2E-12	9.8E-11		9.8E-11	
VOC	Xylenes (total)	1330-20-7	4.7E-08	7.0E-08	4.9E-07	6.0E-07	5.6E-08	1.1E-07	2.2E-06		2.2E-06	4.5E-06	7.5E-05	7.5E-05		2.6E-08	1.5E-08	6.8E-08	1.1E-07	3.4E-08	2.8E-08	5.0E-07		5.0E-07	1.2E-06	2.2E-05	2.2E-05	
VOC	cis-1,2-Dichloroethene	156-59-2	2.0E-08	1.2E-11	8.3E-13	2.0E-08	2.4E-08	1.8E-11	3.7E-12		2.4E-08	7.6E-10	1.3E-10	7.6E-10		1.1E-08	2.5E-12	1.1E-13	1.1E-08	1.4E-08	4.6E-12	8.6E-13		1.4E-08	2.0E-10	3.7E-11	2.0E-10	
VOC	m,p-xylene	6777-61-2	2.7E-08	5.4E-11	4.2E-09	3.1E-08	3.2E-08	8.6E-11	1.9E-08		3.2E-08	3.5E-09	6.4E-07	6.4E-07		1.5E-08	1.2E-11	5.8E-10	1.6E-08	1.9E-08	2.1E-11	4.3E-09		1.9E-08	9.6E-10	1.9E-07	1.9E-07	
VOC	ortho-xylene	95-47-6	5.5E-09	2.8E-11	1.6E-09	7.1E-09	6.5E-09	4.4E-11	7.2E-09		7.2E-09	1.8E-09	2.4E-07	2.4E-07		3.1E-09	6.0E-12	2.2E-10	3.3E-09	3.9E-09	1.1E-11	1.6E-09		3.9E-09	4.8E-10	7.2E-08	7.2E-08	
VOC	p-Cymene	99-87-6																										
VOC	trans-1,2-Dichloroethene	156-60-5																										
SVOC	1,2,4-Trichlorobenzene	120-82-1	7.2E-11	4.6E-10		5.3E-10	8.6E-11	7.2E-10			7.2E-10	3.0E-08		3.0E-08		4.0E-11	9.9E-11		1.4E-10	5.2E-11	1.8E-10			1.8E-10	8.1E-09		8.1E-09	
SVOC	1,2-Dichlorobenzene	95-50-1	2.5E-10	2.7E-09	9.8E-12	3.0E-09	3.0E-10	4.3E-09	4.4E-11		4.3E-09	1.8E-07	1.5E-09	1.8E-07		1.4E-10	5.9E-10	1.4E-12	7.4E-10	1.8E-10	1.1E-09	1.0E-11		1.1E-09	4.8E-08	4.4E-10	4.8E-08	
SVOC	1,3-Dichlorobenzene	541-73-1	1.5E-11			1.5E-11	1.8E-11				1.8E-11					8.3E-12			8.3E-12	1.1E-11				1.1E-11				
SVOC	1,4-Dichlorobenzene	106-46-7	8.7E-11	4.6E-11	3.5E-12	1.4E-10	1.0E-10	7.3E-11	1.6E-11		1.0E-10	3.0E-09	5.4E-10	3.0E-09		4.9E-11	1.0E-11	4.9E-13	5.9E-11	6.2E-11	1.8E-11	3.6E-12		6.2E-11	8.1E-10	1.6E-10	8.1E-10	
SVOC	2,2'-oxybis(1-Chloropropane)	108-60-1																										
SVOC	2,4,5-Trichlorophenol	95-95-4																										
SVOC	2,4-Dichlorophenol	120-83-2	6.9E-11			6.9E-11	8.2E-11				8.2E-11					3.9E-11			3.9E-11	4.9E-11				4.9E-11				
SVOC	2,4-Dimethylphenol	105-67-9	1.8E-10	1.7E-09	7.2E-10	2.6E-09	2.2E-10	2.6E-09	3.3E-09		3.3E-09	1.1E-07	1.1E-07	1.1E-07		1.0E-10	3.6E-10	1.0E-10	5.6E-10	1.3E-10	6.5E-10	7.5E-10		7.5E-10	2.9E-08	3.3E-08	3.3E-08	
SVOC	2,4-Dinitrotoluene	121-14-2			3.2E-11	3.2E-11			1.4E-10		1.4E-10		4.9E-09	4.9E-09				4.4E-12	4.4E-12			3.3E-11		3.3E-11		1.4E-09	1.4E-09	
SVOC	2,6-Dinitrotoluene	606-20-2		1.8E-10		1.8E-10		2.8E-10			2.8E-10	1.2E-08		1.2E-08			3.8E-11		3.8E-11		7.0E-11			7.0E-11	3.1E-09		3.1E-09	
SVOC	2-Chloronaphthalene	91-58-7																										
SVOC	2-Methylnaphthalene	91-57-6	1.2E-09	2.6E-08	2.2E-09	3.0E-08	1.4E-09	4.2E-08	1.0E-08	3.0E-13	4.2E-08	1.7E-06	3.5E-07	1.7E-06		6.8E-10	5.7E-09	3.1E-10	6.7E-09	8.6E-10	1.0E-08	2.3E-09	2.4E-13	1.0E-08	4.6E-07	1.0E-07	4.6E-07	
SVOC	2-Methylphenol	95-48-7	1.9E-10	1.9E-09	4.1E-10	2.5E-09	2.2E-10	3.0E-09	1.9E-09		3.0E-09	1.3E-07	6.3E-08	1.3E-07		1.0E-10	4.2E-10	5.7E-11	5.8E-10	1.3E-10	7.6E-10	4.3E-10		7.6E-10	3.4E-08	1.9E-08	3.4E-08	
SVOC	3,3'-Dichlorobenzidine	91-94-1																										
SVOC	4-Bromophenyl-phenylether	101-55-3																										
SVOC	4-Chloro-3-methylphenol	59-50-7																										
SVOC	4-Chlorophenyl-phenyl ether	7005-72-3																										
SVOC	4-Methylphenol	106-44-5	2.1E-10	2.7E-09	3.8E-10	3.3E-09	2.5E-10	4.2E-09	1.7E-09		4.2E-09	1.7E-07	5.9E-08	1.7E-07		1.2E-10	5.8E-10	5.3E-11	7.5E-10	1.5E-10	1.1E-09	4.0E-10		1.1E-09	4.7E-08	1.7E-08	4.7E-08	
SVOC	4-Nitrophenol	100-02-7			2.5E-12	2.5E-12			1.1E-11		1.1E-11		3.8E-10	3.8E-10				3.4E-13	3.4E-13			2.6E-12		2.6E-12		1.1E-10	1.1E-10	
SVOC	Acenaphthene	83-32-9	1.8E-10	7.6E-10	2.7E-11	9.7E-10	2.2E-10	1.2E-09	1.2E-10		1.2E-09	5.0E-08	4.1E-09	5.0E-08		1.0E-10	1.6E-10	3.7E-12	2.7E-10	1.3E-10	3.0E-10	2.8E-11		3.0E-10	1.3E-08	1.2E-09	1.3E-08	
SVOC	Acenaphthylene	208-96-8	9.2E-11			9.2E-11	1.1E-10			2.7E-12	1.1E-10					5.2E-11			5.2E-11	6.6E-11			2.2E-12	6.6E-11				
SVOC	Anthracene	120-12-7	1.8E-11	6.6E-11	4.5E-11	1.3E-10	2.2E-11	1.0E-10	2.0E-10	2.4E-12	2.0E-10	4.3E-09	7.0E-09	7.0E-09		1.0E-11	1.4E-11	6.3E-12	3.1E-11	1.3E-11	2.6E-11	4.7E-11	2.0E-12	4.7E-11	1.2E-09	2.0E-09	2.0E-09	
SVOC	Benzo(a)anthracene	56-55-3		1.4E-10	7.9E-11	2.2E-10		2.2E-10	3.6E-10	3.5E-12	3.6E-10	8.9E-09	1.2E-08	1.2E-08			3.0E-11	1.1E-11	4.1E-11		5.4E-11	8.2E-11	2.8E-12	8.2E-11	2.4E-09	3.6E-09	3.6E-09	
SVOC	Benzo(a)pyrene	50-32-8		7.6E-11	5.3E-11	1.3E-10		1.2E-10	2.4E-10	3.8E-12	2.4E-10	5.0E-09	8.1E-09	8.1E-09			1.6E-11	7.3E-12	2.4E-11		3.0E-11	5.5E-11	3.1E-12	5.5E-11	1.3E-09	2.4E-09	2.4E-09	
SVOC	Benzo(b)fluoranthene	205-99-2		2.7E-10	1.5E-10	4.2E-10		4.2E-10	6.6E-10	4.2E-12	6.6E-10	1.7E-08	2.3E-08	2.3E-08			5.8E-11	2.0E-11	7.9E-11		1.1E-10	1.5E-10	3.4E-12	1.5E-10	4.7E-09	6.6E-09	6.6E-09	
SVOC	Benzo(g,h,i)perylene	191-24-2		7.6E-11	4.1E-11	1.2E-10		1.2E-10	1.9E-10	2.8E-12	1.9E-10	5.0E-09	6.4E-09	6.4E-09			1.6E-11	5.7E-12	2.2E-11		3.0E-11	4.3E-11	2.3E-12	4.3E-11	1.3E-09	1.9E-09	1.9E-09	
SVOC	Benzo(k)fluoranthene	207-08-9		2.7E-10	1.5E-10	4.2E-10		4.2E-10	6.6E-10	3.9E-12	6.6E-10	1.7E-08	2.3E-08	2.3E-08			5.8E-11	2.0E-11	7.9E-11		1.1E-10	1.5E-10	3.2E-12	1.5E-10	4.7E-09	6.6E-09	6.6E-09	
SVOC	Benzoic Acid	65-85-0	2.2E-10	6.1E-09	8.7E-09	1.5E-08	2.6E-10	9.6E-09	3.9E-08		3.9E-08	4.0E-07	1.3E-06	1.3E-06		1.2E-10	1.3E-09	1.2E-09	2.6E-09	1.6E-10	2.4E-09	9.0E-09		9.0E-09	1.1E-07	3.9E-07	3.9E-07	
SVOC	Benzyl Alcohol	100-51-6		1.3E-09		1.3E-09		2.1E-09			2.1E-09	8.8E-08		8.8E-08			2.9E-10		2.9E-10		5.3E-10			5.3E-10	2.4E-08		2.4E-08	
SVOC	Butylbenzylphthalate	85-68-7	2.1E-09	2.1E-08	1.3E-09	2.5E-08	2.5E-09	3.4E-08	5.7E-09		3.4E-08	1.4E-06	1.9E-07	1.4E-06		1.2E-09	4.6E-09	1.8E-10	6.0E-09	1.5E-09	8.4E-09	1.3E-09		8.4E-09	3.7E-07	5.7E-08	3.7E-07	
SVOC	Carbazole	86-74-8								3.5E-13	3.5E-13												2.8E-13	2.8E-13				
SVOC	Chrysene	218-01-9		1.9E-10	6.0E-11	2.5E-10		3.0E-10	2.7E-10	3.7E-12	3.0E-10	1.3E-08	9.3E-09	1.3E-08			4.2E-11	8.4E-12	5.0E-11		7.6E-11	6.2E-11	3.0E-12	7.6E-11	3.4E-09	2.7E-09	3.4E-09	
SVOC	Di-n-butylphthalate	84-74-2	1.4E-09	3.8E-09	2.5E-09	7.8E-09	1.7E-09	6.0E-09	1.1E-08	8.1E-13	1.1E-08	2.5E-07	3.9E-07	3.9E-07		8.0E-10	8.3E-10	3.5E-10	2.0E-09	1.0E-09	1.5E-09	2.6E-09	6.5E-13	2.6E-09	6.7E-08	1.1E-07	1.1E-07	
SVOC	Di-n-octylphthalate	117-84-0	1.7E-10	6.6E-10	6.0E-10	1.4E-09	2.0E-10	1.0E-09	2.7E-09		2.7E-09	4.3E-08	9.2E-08	9.2E-08		9.4E-11	1.4E-10	8.3E-11	3.2E-10	1.2E-10	2.6E-10	6.2E-10		6.2E-10	1.2E-08	2.7E-08	2.7E-08	
SVOC	Dibenzo(a,h)anthracene	53-70-3			1.0E-11	1.0E-11			4.6E-11	2.8E-12	4.6E-11		1.6E-09	1.6E-09				1.4E-12	1.4E-12			1.1E-11	2.2E-12	1.1E-11		4.6E-10	4.6E-10	
SVOC	Dibenzofuran	132-64-9	7.0E-11	1.3E-10	2.4E-11	2.2E-10	8.4E-11	2.0E-10	1.1E-10		2.0E-10	8.3E-09	3.7E-09	8.3E-09		3.9E-11	2.7E-11	3.3E-12	7.0E-11	5.0E-11	5.0E-11	2.5E-11		5.0E-11	2.2E-09	1.1E-09	2.2E-09	

Table B-7b (cont.): Particulate Concentrations (mg/m^3) in Ambient Air from Soil - Hypothetical Future Land Use
ACS NPL Site, Griffith, Indiana

	Current/Future Scenario:		FUTURE														FUTURE											
	Location of Exposure:		AREA 5A				Area 5A										AREA 6				Area 6							
	Type of Activity at Emission Location:		Routine Industrial				Excavation					Construction					Routine Industrial				Excavation					Construction		
	Location of Emission:		From Area 1	From Area 2	From Area 3	Total At Area	From Area 1	From Area 2	From Area 3	From Area 4B	Max	From Area 2	From Area 3	Max			From Area 1	From Area 2	From Area 3	Total At Area	From Area 1	From Area 2	From Area 3	From Area 4B	Max	From Area 2	From Area 3	Max
	C/Q (kg/m^3 per kg/m^2/s)		3.2E-01	9.7E-01	7.2E-01		2.0E-04	8.0E-04	1.7E-03	9.6E-05		3.3E-02	5.8E-02				1.8E-01	2.1E-01	1.0E-01		1.2E-04	2.0E-04	3.9E-04	7.7E-05		8.9E-03	1.7E-02	
Analyte Group	Substance	CASRN	C_{air} (mg/m^3)	C_{air} (mg/m^3)	C_{air} (mg/m^3)	C_{air} (mg/m^3)	C_{air} (mg/m^3)	C_{air} (mg/m^3)	C_{air} (mg/m^3)	C_{air} (mg/m^3)	C_{air} (mg/m^3)	C_{air} (mg/m^3)	C_{air} (mg/m^3)	C_{air} (mg/m^3)			C_{air} (mg/m^3)	C_{air} (mg/m^3)	C_{air} (mg/m^3)	C_{air} (mg/m^3)	C_{air} (mg/m^3)	C_{air} (mg/m^3)	C_{air} (mg/m^3)	C_{air} (mg/m^3)	C_{air} (mg/m^3)	C_{air} (mg/m^3)	C_{air} (mg/m^3)	C_{air} (mg/m^3)
SVOC	Diethylphthalate	84-66-2	2.6E-10	1.3E-09	1.9E-10	1.7E-09	3.1E-10	2.0E-09	8.5E-10		2.0E-09	8.2E-08	2.9E-08	8.2E-08			1.5E-10	2.7E-10	2.6E-11	4.4E-10	1.9E-10	4.9E-10	2.0E-10		4.9E-10	2.2E-08	8.5E-09	2.2E-08
SVOC	Dimethylphthalate	131-11-3	9.1E-10	1.3E-08	3.9E-10	1.4E-08	1.1E-09	2.1E-08	1.8E-09		2.1E-08	8.6E-07	6.0E-08	8.6E-07			5.1E-10	2.9E-09	5.4E-11	3.4E-09	6.5E-10	5.2E-09	4.0E-10		5.2E-09	2.3E-07	1.8E-08	2.3E-07
SVOC	Fluoranthene	206-44-0	6.4E-11	2.1E-10	2.3E-10	5.0E-10	7.6E-11	3.3E-10	1.0E-09	3.8E-12	1.0E-09	1.4E-08	3.5E-08	3.5E-08			3.6E-11	4.5E-11	3.2E-11	1.1E-10	4.6E-11	8.2E-11	2.4E-10	3.0E-12	2.4E-10	3.6E-09	1.0E-08	1.0E-08
SVOC	Fluorene	86-73-7	1.8E-10	9.0E-10	3.7E-11	1.1E-09	2.1E-10	1.4E-09	1.7E-10		1.4E-09	5.9E-08	5.7E-09	5.9E-08			9.9E-11	1.9E-10	5.1E-12	3.0E-10	1.3E-10	3.6E-10	3.8E-11		3.6E-10	1.6E-08	1.7E-09	1.6E-08
SVOC	Hexachlorobenzene	118-74-1																										
SVOC	Hexachlorobutadiene	87-68-3	1.0E-10	6.9E-10		7.9E-10	1.2E-10	1.1E-09			1.1E-09	4.5E-08		4.5E-08			5.7E-11	1.5E-10		2.1E-10	7.2E-11	2.7E-10			2.7E-10	1.2E-08		1.2E-08
SVOC	Indeno(1,2,3-cd)pyrene	193-39-5		7.1E-11	3.1E-11	1.0E-10		1.1E-10	1.4E-10	3.3E-12	1.4E-10	4.6E-09	4.8E-09	4.8E-09				1.5E-11	4.3E-12	2.0E-11		2.8E-11	3.2E-11	2.6E-12	3.2E-11	1.2E-09	1.4E-09	1.4E-09
SVOC	Isophorone	78-59-1	3.6E-09	1.2E-08	2.3E-08	3.8E-08	4.3E-09	1.8E-08	1.0E-07	4.0E-13	1.0E-07	7.6E-07	3.5E-06	3.5E-06			2.0E-09	2.5E-09	3.2E-09	7.7E-09	2.6E-09	4.6E-09	2.4E-08	3.2E-13	2.4E-08	2.1E-07	1.0E-06	1.0E-06
SVOC	N-Nitroso-di-n-propylamine	621-64-7																										
SVOC	N-Nitrosodiphenylamine	86-30-6			7.1E-11	7.1E-11			3.2E-10		3.2E-10		1.1E-08	1.1E-08					9.9E-12	9.9E-12			7.4E-11		7.4E-11		3.2E-09	3.2E-09
SVOC	Naphthalene	91-20-3	1.9E-09	5.1E-09	4.8E-09	1.2E-08	2.3E-09	8.1E-09	2.2E-08	2.4E-13	2.2E-08	3.3E-07	7.4E-07	7.4E-07			1.1E-09	1.1E-09	6.6E-10	2.9E-09	1.4E-09	2.0E-09	5.0E-09	1.9E-13	5.0E-09	9.0E-08	2.2E-07	2.2E-07
SVOC	Pentachlorophenol	87-86-5	3.3E-10	2.3E-09	6.0E-10	3.3E-09	3.9E-10	3.7E-09	2.7E-09		3.7E-09	1.5E-07	9.3E-08	1.5E-07			1.8E-10	5.1E-10	8.4E-11	7.7E-10	2.3E-10	9.2E-10	6.2E-10		9.2E-10	4.1E-08	2.7E-08	4.1E-08
SVOC	Phenanthrene	85-01-8	1.5E-10	9.0E-10	2.4E-10	1.3E-09	1.8E-10	1.4E-09	1.1E-09	1.4E-12	1.4E-09	5.8E-08	3.7E-08	5.8E-08			8.5E-11	1.9E-10	3.3E-11	3.1E-10	1.1E-10	3.5E-10	2.5E-10	1.2E-12	3.5E-10	1.6E-08	1.1E-08	1.6E-08
SVOC	Phenol	108-95-2	3.5E-10	2.8E-09	7.7E-09	1.1E-08	4.2E-10	4.4E-09	3.5E-08		3.5E-08	1.8E-07	1.2E-06	1.2E-06			2.0E-10	6.0E-10	1.1E-09	1.9E-09	2.5E-10	1.1E-09	8.0E-09		8.0E-09	4.9E-08	3.5E-07	3.5E-07
SVOC	Pyrene	129-00-0	9.9E-11	4.1E-10	1.6E-10	6.6E-10	1.2E-10	6.4E-10	7.1E-10	3.7E-12	7.1E-10	2.6E-08	2.4E-08	2.6E-08			5.5E-11	8.8E-11	2.2E-11	1.7E-10	7.1E-11	1.6E-10	1.6E-10	3.0E-12	1.6E-10	7.1E-09	7.1E-09	7.1E-09
SVOC	bis(2-Chloroethyl) ether	111-44-4	1.7E-10	9.6E-10		1.1E-09	2.0E-10	1.5E-09			1.5E-09	6.2E-08		6.2E-08			9.5E-11	2.1E-10		3.0E-10	1.2E-10	3.8E-10			3.8E-10	1.7E-08		1.7E-08
SVOC	bis(2-Ethylhexyl)phthalate	117-81-7	5.5E-09	1.7E-08	5.8E-08	8.1E-08	6.6E-09	2.7E-08	2.6E-07	3.8E-11	2.6E-07	1.1E-06	8.9E-06	8.9E-06			3.1E-09	3.8E-09	8.0E-09	1.5E-08	4.0E-09	6.9E-09	6.0E-08	3.1E-11	6.0E-08	3.1E-07	2.6E-06	2.6E-06
P/PCB	4,4'-DDD	72-54-8	6.0E-11	7.4E-11		1.3E-10	7.2E-11	1.2E-10		7.5E-13	1.2E-10	4.8E-09		4.8E-09			3.4E-11	1.6E-11		5.0E-11	4.3E-11	2.9E-11		6.0E-13	4.3E-11	1.3E-09		1.3E-09
P/PCB	4,4'-DDE	72-55-9		4.5E-11		4.5E-11		7.0E-11		2.8E-12	7.0E-11	2.9E-09		2.9E-09				9.7E-12		9.7E-12		1.8E-11		2.2E-12	1.8E-11	7.8E-10		7.8E-10
P/PCB	4,4'-DDT	50-29-3	8.0E-11	6.3E-11		1.4E-10	9.6E-11	1.0E-10		2.3E-12	1.0E-10	4.1E-09		4.1E-09			4.5E-11	1.4E-11		5.9E-11	5.8E-11	2.5E-11		1.8E-12	5.8E-11	1.1E-09		1.1E-09
P/PCB	Aldrin	309-00-2		3.1E-10		3.1E-10		4.8E-10			4.8E-10	2.0E-08		2.0E-08				6.6E-11		6.6E-11		1.2E-10			1.2E-10	5.4E-09		5.4E-09
P/PCB	Aroclor-1242	3469-21-9	5.1E-10		1.1E-09	1.6E-09	6.1E-10		5.0E-09		5.0E-09		1.7E-07	1.7E-07			2.9E-10		1.5E-10	4.4E-10	3.7E-10		1.1E-09		1.1E-09		5.0E-08	5.0E-08
P/PCB	Aroclor-1248	2672-29-6	3.5E-10	2.5E-09	6.0E-10	3.5E-09	4.2E-10	4.0E-09	2.7E-09	2.1E-12	4.0E-09	1.6E-07	9.2E-08	1.6E-07			2.0E-10	5.4E-10	8.3E-11	8.2E-10	2.5E-10	9.9E-10	6.2E-10	1.7E-12	9.9E-10	4.4E-08	2.7E-08	4.4E-08
P/PCB	Aroclor-1254	1097-69-1	5.9E-10	1.8E-09	3.6E-10	2.8E-09	7.0E-10	2.9E-09	1.6E-09	8.4E-11	2.9E-09	1.2E-07	5.5E-08	1.2E-07			3.3E-10	3.9E-10	5.0E-11	7.7E-10	4.2E-10	7.2E-10	3.7E-10	6.8E-11	7.2E-10	3.2E-08	1.6E-08	3.2E-08
P/PCB	Aroclor-1260	1096-82-5	3.7E-10	1.7E-08	2.4E-10	1.8E-08	4.4E-10	2.8E-08	1.1E-09	9.3E-12	2.8E-08	1.1E-06	3.8E-08	1.1E-06			2.1E-10	3.8E-09	3.4E-11	4.0E-09	2.6E-10	6.9E-09	2.5E-10	7.5E-12	6.9E-09	3.1E-07	1.1E-08	3.1E-07
P/PCB	Dieldrin	60-57-1	4.0E-12			4.0E-12	4.8E-12				4.8E-12						2.3E-12			2.3E-12		2.9E-12			2.9E-12			
P/PCB	Endosulfan I	959-98-8	2.0E-11			2.0E-11	2.4E-11			3.7E-12	2.4E-11						1.1E-11			1.1E-11	1.4E-11			3.0E-12	1.4E-11			
P/PCB	Endosulfan sulfate	1031-07-8								5.8E-13	5.8E-13													4.6E-13	4.6E-13			
P/PCB	Endrin	72-20-8	2.7E-11			2.7E-11	3.2E-11			1.4E-12	3.2E-11						1.5E-11			1.5E-11	1.9E-11			1.2E-12	1.9E-11			
P/PCB	Endrin aldehyde	7421-93-4																										
P/PCB	Endrin ketone	3494-70-5																										
P/PCB	Heptachlor	76-44-8								6.0E-13	6.0E-13													4.8E-13	4.8E-13			
P/PCB	Heptachlor epoxide	1024-57-3																										
P/PCB	Methoxychlor	72-43-5								2.8E-12	2.8E-12													2.2E-12	2.2E-12			
P/PCB	alpha-BHC	319-84-6		1.7E-11		1.7E-11		2.6E-11			2.6E-11	1.1E-09		1.1E-09				3.6E-12		3.6E-12		6.6E-12			6.6E-12	2.9E-10		2.9E-10
P/PCB	alpha-Chlordane	5103-71-9								2.1E-12	2.1E-12													1.7E-12	1.7E-12			
P/PCB	beta-BHC	319-85-7		3.2E-11		3.2E-11		5.0E-11		2.5E-13	5.0E-11	2.1E-09		2.1E-09				6.9E-12		6.9E-12		1.3E-11		2.0E-13	1.3E-11	5.6E-10		5.6E-10
P/PCB	gamma-BHC	58-89-9								2.8E-13	2.8E-13													2.2E-13	2.2E-13			
P/PCB	gamma-Chlordane	5103-74-2	2.0E-11			2.0E-11	2.4E-11			4.6E-13	2.4E-11						1.1E-11			1.1E-11	1.4E-11			3.7E-13	1.4E-11			
INORG	Antimony	7440-36-0	2.7E-10	3.3E-09	5.7E-09	9.3E-09	3.2E-10	5.2E-09	2.6E-08		2.6E-08	2.2E-07	8.8E-07	8.8E-07			1.5E-10	7.2E-10	7.9E-10	1.7E-09	1.9E-10	1.3E-09	5.9E-09		5.9E-09	5.8E-08	2.6E-07	2.6E-07
INORG	Arsenic	7440-38-2	7.2E-11	2.5E-10	1.4E-10	4.6E-10	8.6E-11	3.9E-10	6.3E-10	7.3E-11	6.3E-10	1.6E-08	2.2E-08	2.2E-08			4.0E-11	5.3E-11	1.9E-11	1.1E-10	5.2E-11	9.7E-11	1.4E-10	5.9E-11	1.4E-10	4.3E-09	6.3E-09	6.3E-09
INORG	Barium	7440-39-3	3.9E-09	4.9E-08	9.1E-08	1.4E-07	4.7E-09	7.8E-08	4.1E-07		4.1E-07	3.2E-06	1.4E-05	1.4E-05			2.2E-09	1.1E-08	1.3E-08	2.6E-08	2.8E-09	1.9E-08	9.5E-08		9.5E-08	8.7E-07	4.1E-06	4.1E-06
INORG	Beryllium	7440-41-7	3.5E-12	1.6E-11	1.5E-11	3.4E-11	4.1E-12	2.5E-11	6.7E-11		6.7E-11	1.0E-09	2.3E-09	2.3E-09			1.9E-12	3.4E-12	2.0E-12	7.4E-12	2.5E-12	6.3E-12	1.5E-11		1.5E-11	2.8E-10	6.7E-10	6.7E-10
INORG	Cadmium	7440-43-9	2.4E-10	5.4E-09	1.6E-08	2.1E-08	2.9E-10	8.5E-09	7.1E-08	5.7E-11	7.1E-08	3.5E-07	2.4E-06	2.4E-06			1.4E-10	1.2E-09	2.2E-09	3.5E-09	1.8E-10	2.1E-09	1.6E-08	4.5E-11	1.6E-08	9.4E-08	7.1E-07	7.1E-07
INORG	Chromium 3+	6065-83-1	2.7E-09	6.4E-08	4.5E-08	1.1E-07	3.3E-09	1.0E-07	2.0E-07	2.7E-10	2.0E-07	4.2E-06	6.9E-06	6.9E-06			1.5E-09	1.4E-08	6.3E-09	2.2E-08	2.0E-09	2.5E-08	4.7E-08	2.2E-10	4.7E-08	1.1E-06	2.0E-06	2.0E-06
INORG	Chromium 6+	8540-29-9	4.5E-10	1.1E-08	7.5E-09	1.9E-08	5.4E-10	1.7E-08	3.4E-08	4.5E-11	3.4E-08	7.0E-07	1.2E-06	1.2E-06			2.6E-10	2.3E-09	1.0E-09	3.6E-09	3.3E-10	4.2E-09	7.8E-09	3.6E-11	7.8E-09	1.9E-07	3.4E-07	3.4E-07
INORG	Cobalt	7440-48-4	1.8E-10	7.2E-10	1.8E-09	2.7E-09	2.1E-10	1.1E-09	8.0E-09		8.0E-09	4.7E-08	2.7E-07	2.7E-07			1.0E-10	1.6E-10	2.5E-10	5.0E-10	1.3E-10	2.8E-10	1.8E-09		1.8E-09	1.3E-08	8.0E-08	8.0E-08
INORG	Copper	7440-50-8	1.1E-09	6.7E-08	7.4E-08	1.4E-07	1.3E-09	1.1E-07	3.4E-07	3.6E-10	3.4E-07	4.4E-06	1.1E-05	1.1E-05			6.1E-10	1.4E-08	1.0E-08	2.5E-08	7.8E-10	2.6E-08	7.7E-08	2.8E-10	7.7E-08	1.2E-06	3.4E-06	3.4E-06
INORG	Cyanide (total)	57-12-5	1.6E-10		1.1E-09	1.2E-09	1.9E-10		4.8E-09		4.8E-09		1.6E-07	1.6E-07			9.0E-11		1.5E-10	2.4E-10	1.1E-10		1.1E-09		1.1E-09		4.8E-08	4.8E-08
INORG	Lead	7439-92-1	1.4E-08	5.2E-07	2.5E-07	7.8E-07	1.7E-08	8.2E-07	1.1E-06	1.4E-09	1.1E-06	3.4E-05	3.9E-05	3.9E-05			7.9E-09	1.1E-07	3.5E-08	1.5E-07	1.0E-08	2.0E-07	2.6E-07	1.1E-09	2.6E-07	9.1E-06	1.1E-05	1.1E-05
INORG	Manganese	7439-96-5	6.1E-09	1.2E-08	2.5E-08	4.3E-08	7.3E-09	1.9E-08	1.1E-07		1.1E-07	7.8E-07	3.8E-06	3.8E-06			3.4E-09	2.6E-09	3.4E-09	9.5E-09	4.4E-09	4.7E-09	2.6E-08		2.6E-08	2.1E-07	1.1E-06	1.1E-06
INORG	Mercury	7439-97-6	3.8E-11	4.0E-10	3.9E-10	8.3E-10	4.6E-11	6.3E-10	1.8E-09	4.3E-12	1.8E-09	2.6E-08	6.0E-08	6.0E-08			2.2E-11	8.6E-11	5.4E-11	1.6E-10	2.8E-11	1.6E-10	4.0E-10	3.5E-12	4.0E-10	7.0E-09	1.8E-08	1.8E-08
INORG	Nickel	7440-02-0	1.4E-10	1.2E-09	2.1E-09	3.5E-09	1.7E-10	2.0E-09	9.4E-09		9.4E-09	8.1E-08	3.2E-07	3.2E-07			8.1E-11	2.7E-10	2.9E-10	6.4E-10	1.0E-10	4.9E-10	2.2E-09		2.2E-09	2.2E-08	9.4E-08	9.4E-08
INORG	Selenium	7782-49-2	1.0E-11	1.4E-10	1.4E-09	1.6E-09	1.2E-11	2.2E-10	6.4E-09		6.4E-09	9.1E-09	2.2E-07	2.2E-07			5.7E-12	3.0E-11	2.0E-10	2.3E-10	7.2E-12	5.5E-11	1.5E-09		1.5E-09	2.5E-09	6.4E-08	6.4E-08
INORG	Silver	7440-22-4		5.0E-10	3.0E-09	3.5E-09		7.9E-10	1.4E-08		1.4E-08	3.2E-08	4.7E-07	4.7E-07				1.1E-10	4.2E-10	5.3E-10		2.0E-10	3.2E-09		3.2E-09	8.7E-09	1.4E-07	1.4E-07
INORG	Thallium	7440-28-0		3.7E-11	3.0E-11	6.7E-11		5.8E-11	1.4E-10		1.4E-10	2.4E-09	4.6E-09	4.6E-09				7.9E-12	4.2E-12	1.2E-11		1.4E-11	3.1E-11		3.1E-11	6.4E-10	1.4E-09	1.4E-09
INORG	Vanadium	7440-62-2	1.8E-10	4.9E-10	7.1E-10	1.4E-09	2.2E-10	7.7E-10	3.2E-09		3.2E-09	3.2E-08	1.1E-07	1.1E-07			1.0E-10	1.1E-10	9.9E-11	3.1E-10	1.3E-10	1.9E-10	7.4E-10		7.4E-10	8.5E-09	3.2E-08	3.2E-08
INORG	Zinc	7440-66-6	6.0E-09	1.7E-07	5.9E-07	7.7E-07	7.2E-09	2.7E-07	2.7E-06	2.9E-09	2.7E-06	1.1E-05	9.2E-05	9.2E-05			3.4E-09	3.6E-08	8.3E-08	1.2E-07	4.3E-09	6.6E-08	6.2E-07	2.3E-09	6.2E-07	2.9E-06	2.7E-05	2.7E-05
TIC	Acetaldehyde	75-07-0																										
TIC	Acetophenone	98-86-2																										
TIC	Azobenzene	103-33-3																										
TIC	Butanol, 1-	71-36-3																										
TIC	Caprolactam	105-60-2																										
TIC	Chlorodifluoromethane	75-45-6																										
TIC	Cyclohexanone	108-94-1																										
TIC	Diethyl ether	60-29-7																										
TIC	Dioxane, 1,4-	123-91-1																										
TIC	Ethanol, 2-(2-butoxyethoxy)-	112-34-5																										
TIC	Hexane, n-	110-54-3		7.60E-12		7.60E-12		1.20E-11			1.20E-11	4.95E-10		5.0E-10				1.65E-12		1.65E-12		3.00E-12			3.00E-12	1.34E-10		1.3E-10
TIC	Phenol, 4,4'-(1-methylethylide	80-05-7																										
TIC	Phthalic anhydride	85-44-9	9.70E-11			9.70E-11	1.16E-10				1.16E-10						5.45E-11			5.45E-11	6.96E-11				6.96E-11			

Table B-8a: Vapor Concentrations (mg/m³) in Ambient Air from Soil - Current Land Use
ACS NPL Site, Griffith, Indiana

	Current/Future Scenario:		CURRENT					CURRENT				CURRENT				CURRENT					CURRENT				
	Location of Exposure:		AREA 1					AREA 4A				AREA 4B				AREA 5					AREA 6				
	Type of Activity at Emission Location:		Routine Industrial/Undeveloped				Excavatio	Routine Industrial/Undeveloped				Routine Industrial/Undeveloped				Routine Industrial/Undeveloped				Excavatio	Routine Industrial/Undeveloped				Excavatio
	Location of Emission:		From Area 1	From Area 2	From Area 3	Total At Area	At Area	From Area 1	From Area 2	From Area 3	Total At Area	From Area 1	From Area 2	From Area 3	Total At Area	From Area 1	From Area 2	From Area 3	Total At Area	At Area	From Area 1	From Area 2	From Area 3	Total At Area	At Area
	C/Q (kg/m³ per kg/m²/s)		1.2E+01	7.2E-01	8.3E-02		5.6E-01	4.7E-01	1.2E-01	2.1E-02		2.3E+00	2.7E-01	4.6E-02		3.2E-01	9.7E-01	7.2E-01		2.0E-04	1.8E-01	2.1E-01	1.0E-01		1.2E-04
Analyte Group	Substance	CASRN	C_{air} (mg/m³)	C_{air} (mg/m³)	C_{air} (mg/m³)	C_{air} (mg/m³)	C_{air} (mg/m³)	C_{air} (mg/m³)	C_{air} (mg/m³)	C_{air} (mg/m³)	C_{air} (mg/m³)	C_{air} (mg/m³)	C_{air} (mg/m³)	C_{air} (mg/m³)	C_{air} (mg/m³)	C_{air} (mg/m³)	C_{air} (mg/m³)	C_{air} (mg/m³)	C_{air} (mg/m³)	C_{air} (mg/m³)	C_{air} (mg/m³)	C_{air} (mg/m³)	C_{air} (mg/m³)	C_{air} (mg/m³)	C_{air} (mg/m³)
VOC	1,1,1-Trichloroethane	71-55-6			9.1E-09	9.1E-09	3.8E-01			2.3E-09	2.3E-09			5.0E-09	5.0E-09			7.9E-08	7.9E-08	1.4E-04			1.1E-08	1.1E-08	8.2E-05
VOC	1,1,2,2-Tetrachloroethane	79-34-5					1.6E-04													5.9E-08					3.5E-08
VOC	1,1,2-Trichloroethane	79-00-5	4.0E-07			4.0E-07	7.6E-04	1.6E-08			1.6E-08	7.7E-08			7.7E-08	1.1E-08			1.1E-08	2.7E-07	6.1E-09			6.1E-09	1.6E-07
VOC	1,1-Dichloroethane	75-34-3			8.6E-08	8.6E-08	5.9E-03			2.2E-08	2.2E-08			4.7E-08	4.7E-08			7.4E-07	7.4E-07	2.1E-06			1.0E-07	1.0E-07	1.3E-06
VOC	1,1-Dichloroethene	75-35-4																							
VOC	1,2,4-Trimethylbenzene	95-63-6																							
VOC	1,2-Dichloroethane	107-06-2					6.6E-03													2.4E-06					1.4E-06
VOC	1,2-Dichloroethene (total)	540-59-0	4.8E-07		8.8E-06	9.3E-06	5.2E-02	1.9E-08		2.2E-06	2.2E-06	9.3E-08		4.9E-06	5.0E-06	1.3E-08		7.6E-05	7.6E-05	1.9E-05	7.2E-09		1.1E-05	1.1E-05	1.1E-05
VOC	1,2-Dichloropropane	78-87-5			3.3E-08	3.3E-08	3.8E-03			8.4E-09	8.4E-09			1.8E-08	1.8E-08			2.9E-07	2.9E-07	1.4E-06			4.0E-08	4.0E-08	8.2E-07
VOC	1,3,5-Trimethylbenzene	108-67-8																							
VOC	2-Butanone	78-93-3																							
VOC	2-Hexanone	591-78-6																							
VOC	4-Methyl-2-pentanone	108-10-1					1.4E-02													5.2E-06					3.1E-06
VOC	Acetone	67-64-1			1.4E-08	1.4E-08	2.4E-02			3.6E-09	3.6E-09			8.0E-09	8.0E-09			1.2E-07	1.2E-07	8.7E-06			1.7E-08	1.7E-08	5.2E-06
VOC	Benzene	71-43-2			2.5E-06	2.5E-06	7.4E-02			6.4E-07	6.4E-07			1.4E-06	1.4E-06			2.2E-05	2.2E-05	2.6E-05			3.0E-06	3.0E-06	1.6E-05
VOC	Bromodichloromethane	75-27-4																							
VOC	Carbon Disulfide	75-15-0	6.1E-08			6.1E-08		2.4E-09			2.4E-09	1.2E-08			1.2E-08	1.6E-09			1.6E-09		9.2E-10			9.2E-10	
VOC	Carbon Tetrachloride	56-23-5																							
VOC	Chlorobenzene	108-90-7			5.8E-06	5.8E-06	9.3E-04			1.5E-06	1.5E-06			3.2E-06	3.2E-06			5.1E-05	5.1E-05	3.4E-07			7.0E-06	7.0E-06	2.0E-07
VOC	Chloroethane	75-00-3																							
VOC	Chloroform	67-66-3	8.3E-08		8.8E-09	9.2E-08	6.8E-02	3.3E-09		2.2E-09	5.5E-09	1.6E-08		4.9E-09	2.1E-08	2.2E-09		7.6E-08	7.8E-08	2.5E-05	1.2E-09		1.1E-08	1.2E-08	1.5E-05
VOC	Chloromethane	74-87-3																							
VOC	Ethyl Benzene	100-41-4			6.4E-05	6.4E-05	5.5E-02			1.6E-05	1.6E-05			3.5E-05	3.5E-05			5.5E-04	5.5E-04	2.0E-05			7.7E-05	7.7E-05	1.2E-05
VOC	Methylene Chloride	75-09-2			5.5E-07	5.5E-07	9.4E-02			1.4E-07	1.4E-07			3.0E-07	3.0E-07			4.7E-06	4.7E-06	3.4E-05			6.6E-07	6.6E-07	2.0E-05
VOC	Styrene	100-42-5			5.9E-06	5.9E-06	3.9E-03			1.5E-06	1.5E-06			3.3E-06	3.3E-06			5.1E-05	5.1E-05	1.4E-06			7.1E-06	7.1E-06	8.4E-07
VOC	Tetrachloroethene	127-18-4	1.5E-05		3.0E-04	3.2E-04	6.6E-02	5.8E-07		7.6E-05	7.7E-05	2.8E-06		1.7E-04	1.7E-04	3.9E-07		2.6E-03	2.6E-03	2.4E-05	2.2E-07		3.6E-04	3.6E-04	1.4E-05
VOC	Tetrahydrofuran	109-99-9																							
VOC	Toluene	108-88-3	6.2E-06		7.4E-04	7.4E-04	1.2E-01	2.4E-07		1.9E-04	1.9E-04	1.2E-06		4.1E-04	4.1E-04	1.7E-07		6.4E-03	6.4E-03	4.4E-05	9.4E-08		8.9E-04	8.9E-04	2.6E-05
VOC	Trichloroethene	79-01-6	2.5E-06		8.4E-05	8.7E-05	6.3E-02	1.0E-07		2.1E-05	2.1E-05	4.9E-07		4.7E-05	4.7E-05	6.8E-08		7.3E-04	7.3E-04	2.3E-05	3.8E-08		1.0E-04	1.0E-04	1.4E-05
VOC	Vinyl Chloride	75-01-4																							
VOC	Xylenes (total)	1330-20-7	1.5E-04		4.3E-04	5.8E-04	5.5E-02	5.9E-06		1.1E-04	1.1E-04	2.9E-05		2.4E-04	2.7E-04	4.0E-06		3.7E-03	3.7E-03	2.0E-05	2.3E-06		5.2E-04	5.2E-04	1.2E-05
VOC	cis-1,2-Dichloroethene	156-59-2					2.6E-01													9.4E-05					5.6E-05
VOC	m,p-xylene	6777-61-2					5.7E-02													2.0E-05					1.2E-05
VOC	ortho-xylene	95-47-6					3.1E-02													1.1E-05					6.7E-06
VOC	p-Cymene	99-87-6																							
VOC	trans-1,2-Dichloroethene	156-60-5																							
SVOC	1,2,4-Trichlorobenzene	120-82-1					5.7E-05													2.1E-08					1.2E-08
SVOC	1,2-Dichlorobenzene	95-50-1			2.3E-07	2.3E-07	6.0E-04			5.9E-08	5.9E-08			1.3E-07	1.3E-07			2.0E-06	2.0E-06	2.2E-07			2.8E-07	2.8E-07	1.3E-07
SVOC	1,3-Dichlorobenzene	541-73-1																							
SVOC	1,4-Dichlorobenzene	106-46-7					2.3E-04													8.3E-08					5.0E-08
SVOC	2,2'-oxybis(1-Chloropropane)	108-60-1																							
SVOC	2,4,5-Trichlorophenol	95-95-4			2.2E-09	2.2E-09				5.5E-10	5.5E-10			1.2E-09	1.2E-09			1.9E-08	1.9E-08				2.6E-09	2.6E-09	
SVOC	2,4-Dichlorophenol	120-83-2					1.7E-05													6.2E-09					3.7E-09
SVOC	2,4-Dimethylphenol	105-67-9			1.0E-07	1.0E-07	3.9E-05			2.7E-08	2.7E-08			5.8E-08	5.8E-08			9.1E-07	9.1E-07	1.4E-08			1.3E-07	1.3E-07	8.4E-09
SVOC	2,4-Dinitrotoluene	121-14-2																							
SVOC	2,6-Dinitrotoluene	606-20-2																							
SVOC	2-Chloronaphthalene	91-58-7																							
SVOC	2-Methylnaphthalene	91-57-6	1.9E-05		2.3E-06	2.1E-05	2.8E-04	7.3E-07		5.9E-07	1.3E-06	3.6E-06		1.3E-06	4.9E-06	5.0E-07		2.0E-05	2.1E-05	1.0E-07	2.8E-07		2.8E-06	3.1E-06	6.0E-08
SVOC	2-Methylphenol	95-48-7			2.4E-07	2.4E-07	5.6E-05			6.0E-08	6.0E-08			1.3E-07	1.3E-07			2.1E-06	2.1E-06	2.0E-08			2.9E-07	2.9E-07	1.2E-08
SVOC	3,3'-Dichlorobenzidine	91-94-1																							
SVOC	4-Bromophenyl-phenylether	101-55-3																							
SVOC	4-Chloro-3-methylphenol	59-50-7																							
SVOC	4-Chlorophenyl-phenyl ether	7005-72-3																							
SVOC	4-Methylphenol	106-44-5			6.1E-07	6.1E-07	1.7E-04			1.6E-07	1.6E-07			3.4E-07	3.4E-07			5.3E-06	5.3E-06	6.0E-08			7.4E-07	7.4E-07	3.6E-08
SVOC	4-Nitrophenol	100-02-7																							
SVOC	Acenaphthene	83-32-9			9.7E-09	9.7E-09	2.9E-05			2.4E-09	2.4E-09			5.4E-09	5.4E-09			8.4E-08	8.4E-08	1.1E-08			1.2E-08	1.2E-08	6.3E-09
SVOC	Acenaphthylene	208-96-8	1.1E-06			1.1E-06	1.1E-05	4.3E-08			4.3E-08	2.1E-07			2.1E-07	2.9E-08			2.9E-08	4.0E-09	1.6E-08			1.6E-08	2.4E-09
SVOC	Anthracene	120-12-7	1.0E-07		5.1E-09	1.0E-07	8.5E-07	3.9E-09		1.3E-09	5.2E-09	1.9E-08		2.8E-09	2.2E-08	2.7E-09		4.4E-08	4.7E-08	3.0E-10	1.5E-09		6.2E-09	7.7E-09	1.8E-10
SVOC	Benzo(a)anthracene	56-55-3																							
SVOC	Benzo(a)pyrene	50-32-8																							
SVOC	Benzo(b)fluoranthene	205-99-2																							
SVOC	Benzo(g,h,i)perylene	191-24-2																							
SVOC	Benzo(k)fluoranthene	207-08-9																							
SVOC	Benzoic Acid	65-85-0					2.0E-04													7.1E-08					4.3E-08
SVOC	Benzyl Alcohol	100-51-6																							
SVOC	Butylbenzylphthalate	85-68-7																							
SVOC	Carbazole	86-74-8																							
SVOC	Chrysene	218-01-9																							
SVOC	Di-n-butylphthalate	84-74-2																							
SVOC	Di-n-octylphthalate	117-84-0																							
SVOC	Dibenzo(a,h)anthracene	53-70-3																							
SVOC	Dibenzofuran	132-64-9																							
SVOC	Diethylphthalate	84-66-2																							
SVOC	Dimethylphthalate	131-11-3																							

Table B-8a: Vapor Concentrations (mg/m^3) in Ambient Air from Soil - Current Land Use
ACS NPL Site, Griffith, Indiana

	Current/Future Scenario:		CURRENT					CURRENT				CURRENT				CURRENT					CURRENT				
	Location of Exposure:		AREA 1					AREA 4A				AREA 4B				AREA 5					AREA 6				
	Type of Activity at Emission Location:		Routine Industrial/Undeveloped				Excavatio	Routine Industrial/Undeveloped				Routine Industrial/Undeveloped				Routine Industrial/Undeveloped				Excavatio	Routine Industrial/Undeveloped				Excavatio
	Location of Emission:		From Area 1	From Area 2	From Area 3	Total At Area	At Area	From Area 1	From Area 2	From Area 3	Total At Area	From Area 1	From Area 2	From Area 3	Total At Area	From Area 1	From Area 2	From Area 3	Total At Area	At Area	From Area 1	From Area 2	From Area 3	Total At Area	At Area
	C/Q (kg/m^3 per kg/m^2/s)		1.2E+01	7.2E-01	8.3E-02		5.6E-01	4.7E-01	1.2E-01	2.1E-02		2.3E+00	2.7E-01	4.6E-02		3.2E-01	9.7E-01	7.2E-01		2.0E-04	1.8E-01	2.1E-01	1.0E-01		1.2E-04
Analyte Group	Substance	CASRN	C_{air} (mg/m^3)	C_{air} (mg/m^3)	C_{air} (mg/m^3)	C_{air} (mg/m^3)	C_{air} (mg/m^3)	C_{air} (mg/m^3)	C_{air} (mg/m^3)	C_{air} (mg/m^3)	C_{air} (mg/m^3)	C_{air} (mg/m^3)	C_{air} (mg/m^3)	C_{air} (mg/m^3)	C_{air} (mg/m^3)	C_{air} (mg/m^3)	C_{air} (mg/m^3)	C_{air} (mg/m^3)	C_{air} (mg/m^3)	C_{air} (mg/m^3)	C_{air} (mg/m^3)	C_{air} (mg/m^3)	C_{air} (mg/m^3)	C_{air} (mg/m^3)	C_{air} (mg/m^3)
SVOC	Fluoranthene	206-44-0																							
SVOC	Fluorene	86-73-7			7.2E-09	7.2E-09	1.2E-05			1.8E-09	1.8E-09			4.0E-09	4.0E-09			6.3E-08	6.3E-08	4.4E-09			8.7E-09	8.7E-09	2.7E-09
SVOC	Hexachlorobenzene	118-74-1																							
SVOC	Hexachlorobutadiene	87-68-3																							
SVOC	Indeno(1,2,3-cd)pyrene	193-39-5																							
SVOC	Isophorone	78-59-1	1.8E-06		3.6E-06	5.5E-06	1.9E-03	7.2E-08		9.2E-07	9.9E-07	3.5E-07		2.0E-06	2.4E-06	4.9E-08		3.2E-05	3.2E-05	7.0E-07	2.8E-08		4.4E-06	4.4E-06	4.2E-07
SVOC	N-Nitroso-di-n-propylamine	621-64-7																							
SVOC	N-Nitrosodiphenylamine	86-30-6			6.1E-08	6.1E-08				1.6E-08	1.6E-08			3.4E-08	3.4E-08			5.3E-07	5.3E-07				7.4E-08	7.4E-08	
SVOC	Naphthalene	91-20-3			2.9E-06	2.9E-06	1.2E-03			7.4E-07	7.4E-07			1.6E-06	1.6E-06			2.5E-05	2.5E-05	4.3E-07			3.5E-06	3.5E-06	2.6E-07
SVOC	Pentachlorophenol	87-86-5																							
SVOC	Phenanthrene	85-01-8																							
SVOC	Phenol	108-95-2			5.0E-07	5.0E-07	1.6E-04			1.3E-07	1.3E-07			2.8E-07	2.8E-07			4.3E-06	4.3E-06	5.8E-08			6.0E-07	6.0E-07	3.5E-08
SVOC	Pyrene	129-00-0																							
SVOC	bis(2-Chloroethyl) ether	111-44-4					2.1E-04													7.6E-08					4.5E-08
SVOC	bis(2-Ethylhexyl)phthalate	117-81-7																							
P/PCB	4,4'-DDD	72-54-8																							
P/PCB	4,4'-DDE	72-55-9																							
P/PCB	4,4'-DDT	50-29-3																							
P/PCB	Aldrin	309-00-2																							
P/PCB	Aroclor-1242	3469-21-9																							
P/PCB	Aroclor-1248	2672-29-6																							
P/PCB	Aroclor-1254	1097-69-1																							
P/PCB	Aroclor-1260	1096-82-5																							
P/PCB	Dieldrin	60-57-1																							
P/PCB	Endosulfan I	959-98-8																							
P/PCB	Endosulfan sulfate	1031-07-8																							
P/PCB	Endrin	72-20-8																							
P/PCB	Endrin aldehyde	7421-93-4																							
P/PCB	Endrin ketone	3494-70-5																							
P/PCB	Heptachlor	76-44-8																							
P/PCB	Heptachlor epoxide	1024-57-3																							
P/PCB	Methoxychlor	72-43-5																							
P/PCB	alpha-BHC	319-84-6																							
P/PCB	alpha-Chlordane	5103-71-9																							
P/PCB	beta-BHC	319-85-7																							
P/PCB	gamma-BHC	58-89-9																							
P/PCB	gamma-Chlordane	5103-74-2																							
INORG	Antimony	7440-36-0																							
INORG	Arsenic	7440-38-2																							
INORG	Barium	7440-39-3																							
INORG	Beryllium	7440-41-7																							
INORG	Cadmium	7440-43-9																							
INORG	Chromium 3+	6065-83-1																							
INORG	Chromium 6+	8540-29-9																							
INORG	Cobalt	7440-48-4																							
INORG	Copper	7440-50-8																							
INORG	Cyanide (total)	57-12-5																							
INORG	Lead	7439-92-1																							
INORG	Manganese	7439-96-5																							
INORG	Mercury	7439-97-6																							
INORG	Nickel	7440-02-0																							
INORG	Selenium	7782-49-2																							
INORG	Silver	7440-22-4																							
INORG	Thallium	7440-28-0																							
INORG	Vanadium	7440-62-2																							
INORG	Zinc	7440-66-6																							
TIC	Acetaldehyde	75-07-0																							
TIC	Acetophenone	98-86-2																							
TIC	Azobenzene	103-33-3																							
TIC	Butanol, 1-	71-36-3																							
TIC	Caprolactam	105-60-2																							
TIC	Chlorodifluoromethane	75-45-6																							
TIC	Cyclohexanone	108-94-1																							
TIC	Diethyl ether	60-29-7																							
TIC	Dioxane, 1,4-	123-91-1																							
TIC	Ethanol, 2-(2-butoxyethoxy)-	112-34-5																							
TIC	Hexane, n-	110-54-3																							
TIC	Phenol, 4,4'-(1-methylethylide	80-05-7																							
TIC	Phthalic anhydride	85-44-9																							

Table B-8b: Vapor Concentrations (mg/m³) in Ambient Air from Soil - Hypothetical Future Land Use
ACS NPL Site, Griffith, Indiana

	Current/Future Scenario:		FUTURE					FUTURE						FUTURE						FUTURE				FUTURE				
	Location of Exposure:		AREA 1					AREA 2						AREA 3						AREA 4A				AREA 4B				
	Type of Activity at Emission Location:		Routine Industrial				Excavatio	Routine Industrial				Excavatio	Construction	Routine Industrial				Excavatio	Construction	Routine Industrial				Routine Industrial				Excavatio
	Location of Emission:		From Area 1	From Area 2	From Area 3	Total At Area	At Area	From Area 1	From Area 2	From Area 3	Total At Area	At Area	At Area	From Area 1	From Area 2	From Area 3	Total At Area	At Area	At Area	From Area 1	From Area 2	From Area 3	Total At Area	From Area 1	From Area 2	From Area 3	Total At Area	At Area
	C/Q (kg/m³ per kg/m²/s)		1.2E+01	7.2E-01	8.3E-02		5.6E-01	8.2E-01	1.2E+01	5.5E-01		5.6E-01	3.3E+00	2.8E-01	1.6E+00	1.2E+01		5.6E-01	3.3E+00	4.7E-01	1.2E-01	2.1E-02		2.3E+00	2.7E-01	4.6E-02		5.6E-01
Analyte Group	Substance	CASRN	C_{air} (mg/m³)	C_{air} (mg/m³)	C_{air} (mg/m³)	C_{air} (mg/m³)	C_{air} (mg/m³)	C_{air} (mg/m³)	C_{air} (mg/m³)	C_{air} (mg/m³)	C_{air} (mg/m³)	C_{air} (mg/m³)	C_{air} (mg/m³)	C_{air} (mg/m³)	C_{air} (mg/m³)	C_{air} (mg/m³)	C_{air} (mg/m³)	C_{air} (mg/m³)	C_{air} (mg/m³)	C_{air} (mg/m³)	C_{air} (mg/m³)	C_{air} (mg/m³)	C_{air} (mg/m³)	C_{air} (mg/m³)	C_{air} (mg/m³)	C_{air} (mg/m³)	C_{air} (mg/m³)	C_{air} (mg/m³)
VOC	1,1,1-Trichloroethane	71-55-6	4.3E-02	1.2E-04	7.3E-04	4.4E-02	3.8E-01	2.9E-03	2.0E-03	4.8E-03	9.7E-03	3.8E-03	4.4E-03	1.0E-03	2.7E-04	1.1E-01	1.1E-01	2.0E-01	2.3E-01	1.7E-03	2.0E-05	1.8E-04	1.9E-03	8.2E-03	4.5E-05	4.0E-04	8.6E-03	
VOC	1,1,2,2-Tetrachloroethane	79-34-5	1.1E-04	1.3E-07		1.1E-04	1.6E-04	7.4E-06	2.2E-06		9.7E-06	1.5E-06	1.7E-06	2.5E-06	2.9E-07		2.8E-06			4.3E-06	2.2E-08		4.3E-06	2.1E-05	5.0E-08		2.1E-05	
VOC	1,1,2-Trichloroethane	79-00-5	2.5E-04			2.5E-04	7.6E-04	1.7E-05			1.7E-05			5.9E-06			5.9E-06			9.9E-06			9.9E-06	4.8E-05			4.8E-05	
VOC	1,1-Dichloroethane	75-34-3	7.0E-04	1.0E-04	1.7E-06	8.0E-04	5.9E-03	4.8E-05	1.7E-03	1.1E-05	1.8E-03	3.2E-03	3.6E-03	1.6E-05	2.3E-04	2.4E-04	4.9E-04	4.5E-04	5.2E-04	2.7E-05	1.7E-05	4.3E-07	4.5E-05	1.3E-04	3.9E-05	9.4E-07	1.7E-04	
VOC	1,1-Dichloroethene	75-35-4																										
VOC	1,2,4-Trimethylbenzene	95-63-6																										
VOC	1,2-Dichloroethane	107-06-2	9.6E-04	4.1E-05	5.9E-07	1.0E-03	6.6E-03	6.6E-05	6.9E-04	3.9E-06	7.6E-04	1.1E-03	1.2E-03	2.3E-05	9.2E-05	8.5E-05	2.0E-04	1.3E-04	1.5E-04	3.8E-05	6.9E-06	1.5E-07	4.5E-05	1.8E-04	1.5E-05	3.3E-07	2.0E-04	
VOC	1,2-Dichloroethene (total)	540-59-0	9.7E-03	1.7E-04	3.0E-05	9.9E-03	5.2E-02	6.6E-04	2.8E-03	2.0E-04	3.7E-03	3.7E-03	4.2E-03	2.3E-04	3.7E-04	4.4E-03	5.0E-03	5.7E-03	6.5E-03	3.8E-04	2.8E-05	7.6E-06	4.1E-04	1.9E-03	6.3E-05	1.7E-05	1.9E-03	
VOC	1,2-Dichloropropane	78-87-5	2.0E-03	4.1E-05	9.6E-07	2.0E-03	3.8E-03	1.4E-04	6.8E-04	6.3E-06	8.2E-04	4.7E-04	5.3E-04	4.6E-05	9.1E-05	1.4E-04	2.8E-04	9.5E-05	1.1E-04	7.8E-05	6.8E-06	2.4E-07	8.5E-05	3.8E-04	1.5E-05	5.3E-07	4.0E-04	
VOC	1,3,5-Trimethylbenzene	108-67-8																										
VOC	2-Butanone	78-93-3																										
VOC	2-Hexanone	591-78-6		8.9E-04	1.3E-06	8.9E-04			1.5E-02	8.4E-06	1.5E-02	1.0E-02	1.2E-02		2.0E-03	1.8E-04	2.2E-03	1.3E-04	1.4E-04		1.5E-04	3.2E-07	1.5E-04		3.3E-04	7.0E-07	3.3E-04	
VOC	4-Methyl-2-pentanone	108-10-1	2.0E-03	1.1E-04	2.3E-04	2.3E-03	1.4E-02	1.4E-04	1.8E-03	1.5E-03	3.4E-03	2.8E-03	3.2E-03	4.7E-05	2.3E-04	3.3E-02	3.3E-02	5.2E-02	5.9E-02	7.9E-05	1.8E-05	5.7E-05	1.5E-04	3.9E-04	4.0E-05	1.3E-04	5.5E-04	
VOC	Acetone	67-64-1	1.3E-03	1.5E-04	3.5E-04	1.8E-03	2.4E-02	8.6E-05	2.5E-03	2.3E-03	5.0E-03	9.6E-03	1.1E-02	2.9E-05	3.4E-04	5.1E-02	5.2E-02	1.9E-01	2.2E-01	4.9E-05	2.5E-05	9.0E-05	1.6E-04	2.4E-04	5.7E-05	2.0E-04	4.9E-04	
VOC	Benzene	71-43-2	7.7E-03	1.0E-04	1.2E-04	7.9E-03	7.4E-02	5.3E-04	1.7E-03	7.9E-04	3.1E-03	3.5E-03	4.0E-03	1.8E-04	2.3E-04	1.7E-02	1.8E-02	3.4E-02	3.9E-02	3.0E-04	1.7E-05	3.0E-05	3.5E-04	1.5E-03	3.9E-05	6.6E-05	1.6E-03	
VOC	Bromodichloromethane	75-27-4																										
VOC	Carbon Disulfide	75-15-0																										
VOC	Carbon Tetrachloride	56-23-5																										
VOC	Chlorobenzene	108-90-7	1.2E-03		9.8E-05	1.3E-03	9.3E-04	8.5E-05		6.5E-04	7.4E-04			2.9E-05		1.4E-02	1.4E-02	9.7E-03	1.1E-02	4.9E-05		2.5E-05	7.3E-05	2.4E-04		5.4E-05	2.9E-04	
VOC	Chloroethane	75-00-3																										
VOC	Chloroform	67-66-3	8.1E-03	1.4E-04	2.6E-09	8.2E-03	6.8E-02	5.5E-04	2.4E-03	1.7E-08	2.9E-03	4.4E-03	5.1E-03	1.9E-04	3.2E-04	3.8E-07	5.1E-04	7.1E-07	8.1E-07	3.2E-04	2.4E-05	6.7E-10	3.4E-04	1.5E-03	5.4E-05	1.5E-09	1.6E-03	
VOC	Chloromethane	74-87-3																										
VOC	Ethyl Benzene	100-41-4	7.3E-03	6.0E-04	2.3E-04	8.1E-03	5.5E-02	5.0E-04	1.0E-02	1.5E-03	1.2E-02	1.7E-02	1.9E-02	1.7E-04	1.3E-03	3.3E-02	3.5E-02	5.5E-02	6.3E-02	2.9E-04	1.0E-04	5.8E-05	4.4E-04	1.4E-03	2.3E-04	1.3E-04	1.8E-03	
VOC	Methylene Chloride	75-09-2	1.3E-01	3.5E-04	7.4E-06	1.3E-01	9.4E-02	8.6E-03	5.9E-03	4.9E-05	1.5E-02	4.0E-03	4.6E-03	2.9E-03	7.9E-04	1.1E-03	4.8E-03	7.3E-04	8.4E-04	4.9E-03	5.9E-05	1.9E-06	5.0E-03	2.4E-02	1.3E-04	4.1E-06	2.4E-02	
VOC	Styrene	100-42-5	8.3E-04	2.2E-05	6.6E-05	9.2E-04	3.9E-03	5.7E-05	3.7E-04	4.3E-04	8.6E-04	4.3E-04	4.9E-04	1.9E-05	4.9E-05	9.5E-03	9.5E-03	1.1E-02	1.3E-02	3.3E-05	3.7E-06	1.7E-05	5.3E-05	1.6E-04	8.2E-06	3.6E-05	2.0E-04	
VOC	Tetrachloroethene	127-18-4	1.1E-02	1.3E-03	3.3E-04	1.3E-02	6.6E-02	7.8E-04	2.2E-02	2.2E-03	2.5E-02	3.1E-02	3.5E-02	2.7E-04	3.0E-03	4.8E-02	5.1E-02	6.6E-02	7.5E-02	4.5E-04	2.2E-04	8.4E-05	7.6E-04	2.2E-03	5.0E-04	1.8E-04	2.9E-03	
VOC	Tetrahydrofuran	109-99-9																										
VOC	Toluene	108-88-3	3.9E-02	6.7E-03	9.4E-04	4.6E-02	1.2E-01	2.6E-03	1.1E-01	6.3E-03	1.2E-01	1.0E-01	1.1E-01	9.0E-04	1.5E-02	1.4E-01	1.5E-01	1.2E-01	1.4E-01	1.5E-03	1.1E-03	2.4E-04	2.9E-03	7.4E-03	2.5E-03	5.2E-04	1.0E-02	
VOC	Trichloroethene	79-01-6	9.1E-03	4.0E-04	1.3E-03	1.1E-02	6.3E-02	6.2E-04	6.7E-03	8.8E-03	1.6E-02	1.0E-02	1.2E-02	2.1E-04	8.9E-04	1.9E-01	1.9E-01	2.9E-01	3.3E-01	3.6E-04	6.7E-05	3.4E-04	7.6E-04	1.8E-03	1.5E-04	7.4E-04	2.6E-03	
VOC	Vinyl Chloride	75-01-4		5.5E-06		5.5E-06			9.1E-05		9.1E-05	8.1E-05	9.3E-05		1.2E-05		1.2E-05				9.1E-07		9.1E-07		2.1E-06		2.1E-06	
VOC	Xylenes (total)	1330-20-7	1.8E-02	3.7E-03	4.3E-04	2.2E-02	5.5E-02	1.3E-03	6.2E-02	2.8E-03	6.6E-02	5.5E-02	6.3E-02	4.3E-04	8.3E-03	6.2E-02	7.1E-02	5.5E-02	6.3E-02	7.2E-04	6.2E-04	1.1E-04	1.4E-03	3.5E-03	1.4E-03	2.4E-04	5.1E-03	
VOC	cis-1,2-Dichloroethene	156-59-2	3.0E-02	1.6E-06	1.8E-08	3.0E-02	2.6E-01	2.1E-03	2.7E-05	1.2E-07	2.1E-03	5.0E-05	5.7E-05	7.1E-04	3.6E-06	2.6E-06	7.1E-04	4.8E-06	5.5E-06	1.2E-03	2.7E-07	4.5E-09	1.2E-03	5.8E-03	6.1E-07	9.9E-09	5.8E-03	
VOC	m,p-xylene	6777-61-2	7.5E-02	9.4E-06	1.1E-04	7.5E-02	5.7E-02	5.1E-03	1.6E-04	7.4E-04	6.0E-03	1.1E-04	1.2E-04	1.8E-03	2.1E-05	1.6E-02	1.8E-02	1.1E-02	1.3E-02	2.9E-03	1.6E-06	2.8E-05	3.0E-03	1.4E-02	3.5E-06	6.2E-05	1.4E-02	
VOC	ortho-xylene	95-47-6	2.1E-02	4.5E-06	4.0E-05	2.2E-02	3.1E-02	1.5E-03	7.5E-05	2.7E-04	1.8E-03	5.1E-05	5.9E-05	5.0E-04	1.0E-05	5.8E-03	6.3E-03	4.0E-03	4.6E-03	8.4E-04	7.5E-07	1.0E-05	8.5E-04	4.1E-03	1.7E-06	2.2E-05	4.1E-03	
VOC	p-Cymene	99-87-6																										
VOC	trans-1,2-Dichloroethene	156-60-5																										
SVOC	1,2,4-Trichlorobenzene	120-82-1	2.5E-05	9.6E-06		3.4E-05	5.7E-05	1.7E-06	1.6E-04		1.6E-04	1.2E-04	1.4E-04	5.7E-07	2.1E-05		2.2E-05			9.6E-07	1.6E-06		2.6E-06	4.7E-06	3.6E-06		8.3E-06	
SVOC	1,2-Dichlorobenzene	95-50-1	8.8E-04	1.9E-04	1.0E-07	1.1E-03	6.0E-04	6.0E-05	3.1E-03	6.9E-07	3.2E-03	2.1E-03	2.4E-03	2.0E-05	4.1E-04	1.5E-05	4.5E-04	1.0E-05	1.2E-05	3.4E-05	3.1E-05	2.6E-08	6.5E-05	1.7E-04	7.0E-05	5.7E-08	2.4E-04	
SVOC	1,3-Dichlorobenzene	541-73-1																										
SVOC	1,4-Dichlorobenzene	106-46-7	3.4E-04	3.6E-06	4.2E-08	3.4E-04	2.3E-04	2.3E-05	5.9E-05	2.8E-07	8.3E-05	4.1E-05	4.6E-05	7.9E-06	7.9E-06	6.0E-06	2.2E-05	4.1E-06	4.8E-06	1.3E-05	5.9E-07	1.1E-08	1.4E-05	6.5E-05	1.3E-06	2.3E-08	6.6E-05	
SVOC	2,2'-oxybis(1-Chloropropane)	108-60-1																										
SVOC	2,4,5-Trichlorophenol	95-95-4																										
SVOC	2,4-Dichlorophenol	120-83-2	2.5E-05			2.5E-05	1.7E-05	1.7E-06			1.7E-06			5.9E-07			5.9E-07			9.9E-07			9.9E-07	4.9E-06			4.9E-06	
SVOC	2,4-Dimethylphenol	105-67-9	8.5E-06	6.1E-06	4.1E-07	1.5E-05	3.9E-05	5.8E-07	1.0E-04	2.7E-06	1.0E-04	1.2E-04	1.3E-04	2.0E-07	1.3E-05	5.9E-05	7.3E-05	6.9E-05	7.9E-05	3.3E-07	1.0E-06	1.0E-07	1.4E-06	1.6E-06	2.3E-06	2.3E-07	4.1E-06	
SVOC	2,4-Dinitrotoluene	121-14-2			3.5E-08	3.5E-08				2.3E-07	2.3E-07					5.0E-06	5.0E-06	3.4E-06	3.9E-06			8.7E-09	8.7E-09			1.9E-08	1.9E-08	
SVOC	2,6-Dinitrotoluene	606-20-2		9.8E-07		9.8E-07			1.6E-05		1.6E-05	1.7E-05	1.9E-05		2.2E-06		2.2E-06				1.6E-07		1.6E-07		3.7E-07		3.7E-07	
SVOC	2-Chloronaphthalene	91-58-7																										
SVOC	2-Methylnaphthalene	91-57-6	1.2E-04	2.0E-05	2.3E-06	1.4E-04	2.8E-04	7.9E-06	3.4E-04	1.5E-05	3.6E-04	2.8E-04	3.2E-04	2.7E-06	4.5E-05	3.4E-04	3.8E-04	2.8E-04	3.2E-04	4.5E-06	3.4E-06	5.9E-07	8.5E-06	2.2E-05	7.6E-06	1.3E-06	3.1E-05	
SVOC	2-Methylphenol	95-48-7	8.2E-05	1.7E-05	5.5E-07	9.9E-05	5.6E-05	5.6E-06	2.8E-04	3.7E-06	2.9E-04	1.9E-04	2.2E-04	1.9E-06	3.7E-05	8.0E-05	1.2E-04	5.5E-05	6.3E-05	3.2E-06	2.8E-06	1.4E-07	6.1E-06	1.6E-05	6.3E-06	3.1E-07	2.2E-05	
SVOC	3,3'-Dichlorobenzidine	91-94-1																										
SVOC	4-Bromophenyl-phenylether	101-55-3																										
SVOC	4-Chloro-3-methylphenol	59-50-7																										
SVOC	4-Chlorophenyl-phenyl ether	7005-72-3																										
SVOC	4-Methylphenol	106-44-5	1.3E-04	6.1E-05	1.4E-06	1.9E-04	1.7E-04	8.8E-06	1.0E-03	9.0E-06	1.0E-03	7.0E-04	8.0E-04	3.0E-06	1.4E-04	2.0E-04	3.3E-04	1.3E-04	1.5E-04	5.0E-06	1.0E-05	3.4E-07	1.6E-05	2.5E-05	2.3E-05	7.5E-07	4.8E-05	
SVOC	4-Nitrophenol	100-02-7			2.3E-08	2.3E-08				1.5E-07	1.5E-07					3.3E-06	3.3E-06	2.3E-06	2.6E-06			5.8E-09	5.8E-09			1.3E-08	1.3E-08	
SVOC	Acenaphthene	83-32-9	4.3E-05	3.5E-06	1.9E-08	4.6E-05	2.9E-05	2.9E-06	5.8E-05	1.3E-07	6.1E-05	4.0E-05	4.6E-05	1.0E-06	7.8E-06	2.8E-06	1.2E-05	1.9E-06	2.2E-06	1.7E-06	5.8E-07	4.8E-09	2.3E-06	8.2E-06	1.3E-06	1.1E-08	9.5E-06	
SVOC	Acenaphthylene	208-96-8	1.6E-05			1.6E-05	1.1E-05	1.1E-06			1.1E-06			3.8E-07			3.8E-07			6.4E-07			6.4E-07	3.1E-06			3.1E-06	
SVOC	Anthracene	120-12-7	1.2E-06	8.7E-08	9.3E-09	1.3E-06	8.5E-07	8.4E-08	1.5E-06	6.2E-08	1.6E-06	1.0E-06	1.1E-06	2.9E-08	1.9E-07	1.3E-06	1.6E-06	9.2E-07	1.1E-06	4.8E-08	1.5E-08	2.4E-09	6.5E-08	2.4E-07	3.3E-08	5.2E-09	2.7E-07	
SVOC	Benzo(a)anthracene	56-55-3																										
SVOC	Benzo(a)pyrene	50-32-8																										
SVOC	Benzo(b)fluoranthene	205-99-2																										
SVOC	Benzo(g,h,i)perylene	191-24-2																										
SVOC	Benzo(k)fluoranthene	207-08-9																										
SVOC	Benzoic Acid	65-85-0	2.6E-04	1.6E-04	3.5E-05	4.6E-04	2.0E-04	1.8E-05	2.6E-03	2.3E-04	2.9E-03	1.8E-03	2.1E-03	6.1E-06	3.5E-04	5.1E-03	5.4E-03	3.5E-03	4.0E-03	1.0E-05	2.6E-05	8.9E-06	4.6E-05	5.0E-05	6.0E-05	2.0E-05	1.3E-04	
SVOC	Benzyl Alcohol	100-51-6																										
SVOC	Butylbenzylphthalate	85-68-7																										
SVOC	Carbazole	86-74-8																										
SVOC	Chrysene	218-01-9																										
SVOC	Di-n-butylphthalate	84-74-2																										
SVOC	Di-n-octylphthalate	117-84-0																										
SVOC	Dibenzo(a,h)anthracene	53-70-3																										
SVOC	Dibenzofuran	132-64-9																										
SVOC	Diethylphthalate	84-66-2																										
SVOC	Dimethylphthalate	131-11-3																										

Table B-8b: Vapor Concentrations (mg/m³) in Ambient Air from Soil - Hypothetical Future Land Use
ACS NPL Site, Griffith, Indiana

	Current/Future Scenario:		FUTURE					FUTURE						FUTURE						FUTURE				FUTURE				
	Location of Exposure:		AREA 1					AREA 2						AREA 3						AREA 4A				AREA 4B				
	Type of Activity at Emission Location:		Routine Industrial				Excavatio	Routine Industrial				Excavatio	Construction	Routine Industrial				Excavatio	Construction	Routine Industrial				Routine Industrial				Excavatio
	Location of Emission:		From Area 1	From Area 2	From Area 3	Total At Area	At Area	From Area 1	From Area 2	From Area 3	Total At Area	At Area	At Area	From Area 1	From Area 2	From Area 3	Total At Area	At Area	At Area	From Area 1	From Area 2	From Area 3	Total At Area	From Area 1	From Area 2	From Area 3	Total At Area	At Area
	C/Q (kg/m³ per kg/m²/s)		1.2E+01	7.2E-01	8.3E-02		5.6E-01	8.2E-01	1.2E+01	5.5E-01		5.6E-01	3.3E+00	2.8E-01	1.6E+00	1.2E+01		5.6E-01	3.3E+00	4.7E-01	1.2E-01	2.1E-02		2.3E+00	2.7E-01	4.6E-02		5.6E-01
Analyte Group	Substance	CASRN	C_{air} (mg/m³)	C_{air} (mg/m³)	C_{air} (mg/m³)	C_{air} (mg/m³)	C_{air} (mg/m³)	C_{air} (mg/m³)	C_{air} (mg/m³)	C_{air} (mg/m³)	C_{air} (mg/m³)	C_{air} (mg/m³)	C_{air} (mg/m³)	C_{air} (mg/m³)	C_{air} (mg/m³)	C_{air} (mg/m³)	C_{air} (mg/m³)	C_{air} (mg/m³)	C_{air} (mg/m³)	C_{air} (mg/m³)	C_{air} (mg/m³)	C_{air} (mg/m³)	C_{air} (mg/m³)	C_{air} (mg/m³)	C_{air} (mg/m³)	C_{air} (mg/m³)	C_{air} (mg/m³)	C_{air} (mg/m³)
SVOC	Fluoranthene	206-44-0																										
SVOC	Fluorene	86-73-7	1.8E-05	1.8E-06	1.2E-08	2.0E-05	1.2E-05	1.2E-06	3.0E-05	7.7E-08	3.2E-05	2.1E-05	2.4E-05	4.2E-07	4.0E-06	1.7E-06	6.1E-06	1.1E-06	1.3E-06	7.0E-07	3.0E-07	2.9E-09	1.0E-06	3.4E-06	6.8E-07	6.4E-09	4.1E-06	
SVOC	Hexachlorobenzene	118-74-1																										
SVOC	Hexachlorobutadiene	87-68-3																										
SVOC	Indeno(1,2,3-cd)pyrene	193-39-5																										
SVOC	Isophorone	78-59-1	2.8E-03	1.8E-04	5.5E-05	3.1E-03	1.9E-03	1.9E-04	3.0E-03	3.6E-04	3.6E-03	2.1E-03	2.4E-03	6.6E-05	4.0E-04	7.9E-03	8.4E-03	5.4E-03	6.2E-03	1.1E-04	3.0E-05	1.4E-05	1.6E-04	5.4E-04	6.8E-05	3.0E-05	6.4E-04	
SVOC	N-Nitroso-di-n-propylamine	621-64-7																										
SVOC	N-Nitrosodiphenylamine	86-30-6			2.7E-08	2.7E-08				1.8E-07	1.8E-07					3.9E-06	3.9E-06	2.7E-06	3.1E-06			6.9E-09	6.9E-09			1.5E-08	1.5E-08	
SVOC	Naphthalene	91-20-3	8.3E-04	9.1E-05	1.3E-05	9.3E-04	1.2E-03	5.7E-05	1.5E-03	8.7E-05	1.7E-03	1.0E-03	1.2E-03	1.9E-05	2.0E-04	1.9E-03	2.1E-03	1.3E-03	1.5E-03	3.2E-05	1.5E-05	3.3E-06	5.1E-05	1.6E-04	3.4E-05	7.3E-06	2.0E-04	
SVOC	Pentachlorophenol	87-86-5																										
SVOC	Phenanthrene	85-01-8																										
SVOC	Phenol	108-95-2	2.1E-04	3.7E-05	1.6E-05	2.7E-04	1.6E-04	1.5E-05	6.2E-04	1.1E-04	7.4E-04	4.3E-04	4.9E-04	5.0E-06	8.3E-05	2.3E-03	2.4E-03	1.6E-03	1.8E-03	8.4E-06	6.2E-06	4.1E-06	1.9E-05	4.1E-05	1.4E-05	8.9E-06	6.4E-05	
SVOC	Pyrene	129-00-0																										
SVOC	bis(2-Chloroethyl) ether	111-44-4	3.1E-04	3.4E-05		3.4E-04	2.1E-04	2.1E-05	5.7E-04		5.9E-04	3.9E-04	4.5E-04	7.2E-06	7.6E-05		8.3E-05			1.2E-05	5.7E-06		1.8E-05	5.9E-05	1.3E-05		7.2E-05	
SVOC	bis(2-Ethylhexyl)phthalate	117-81-7																										
P/PCB	4,4'-DDD	72-54-8																										
P/PCB	4,4'-DDE	72-55-9																										
P/PCB	4,4'-DDT	50-29-3																										
P/PCB	Aldrin	309-00-2																										
P/PCB	Aroclor-1242	3469-21-9																										
P/PCB	Aroclor-1248	2672-29-6																										
P/PCB	Aroclor-1254	1097-69-1																										
P/PCB	Aroclor-1260	1096-82-5																										
P/PCB	Dieldrin	60-57-1																										
P/PCB	Endosulfan I	959-98-8																										
P/PCB	Endosulfan sulfate	1031-07-8																										
P/PCB	Endrin	72-20-8																										
P/PCB	Endrin aldehyde	7421-93-4																										
P/PCB	Endrin ketone	3494-70-5																										
P/PCB	Heptachlor	76-44-8																										
P/PCB	Heptachlor epoxide	1024-57-3																										
P/PCB	Methoxychlor	72-43-5																										
P/PCB	alpha-BHC	319-84-6																										
P/PCB	alpha-Chlordane	5103-71-9																										
P/PCB	beta-BHC	319-85-7																										
P/PCB	gamma-BHC	58-89-9																										
P/PCB	gamma-Chlordane	5103-74-2																										
INORG	Antimony	7440-36-0																										
INORG	Arsenic	7440-38-2																										
INORG	Barium	7440-39-3																										
INORG	Beryllium	7440-41-7																										
INORG	Cadmium	7440-43-9																										
INORG	Chromium 3+	6065-83-1																										
INORG	Chromium 6+	8540-29-9																										
INORG	Cobalt	7440-48-4																										
INORG	Copper	7440-50-8																										
INORG	Cyanide (total)	57-12-5																										
INORG	Lead	7439-92-1																										
INORG	Manganese	7439-96-5																										
INORG	Mercury	7439-97-6																										
INORG	Nickel	7440-02-0																										
INORG	Selenium	7782-49-2																										
INORG	Silver	7440-22-4																										
INORG	Thallium	7440-28-0																										
INORG	Vanadium	7440-62-2																										
INORG	Zinc	7440-66-6																										
TIC	Acetaldehyde	75-07-0																										
TIC	Acetophenone	98-86-2																										
TIC	Azobenzene	103-33-3																										
TIC	Butanol, 1-	71-36-3																										
TIC	Caprolactam	105-60-2																										
TIC	Chlorodifluoromethane	75-45-6																										
TIC	Cyclohexanone	108-94-1																										
TIC	Diethyl ether	60-29-7																										
TIC	Dioxane, 1,4-	123-91-1																										
TIC	Ethanol, 2-(2-butoxyethoxy)-	112-34-5																										
TIC	Hexane, n-	110-54-3																										
TIC	Phenol, 4,4'-(1-methylethylide	80-05-7																										
TIC	Phthalic anhydride	85-44-9																										

Table B-8b: Vapor Concentrations (mg/m^3) in Ambient Air from Soil - Hypothetical Future Land Use
ACS NPL Site, Griffith, Indiana

	Current/Future Scenario:		FUTURE													FUTURE													
	Location of Exposure:		AREA 5A				Area 5A									AREA 6				Area 6									
	Type of Activity at Emission Location:		Routine Industrial				Excavation					Construction				Routine Industrial				Excavation					Construction				
	Location of Emission:		From Area 1	From Area 2	From Area 3	Total At Area	From Area 1	From Area 2	From Area 3	From Area 4B	Max	From Area 2	From Area 3	Max		From Area 1	From Area 2	From Area 3	Total At Area	From Area 1	From Area 2	From Area 3	From Area 4B	Max	From Area 2	From Area 3	Max		
	C/Q (kg/m^3 per $kg/m^2/s$)		3.2E-01	9.7E-01	7.2E-01		2.0E-04	8.0E-04	1.7E-03	9.6E-05		3.3E-02	5.8E-02			1.8E-01	2.1E-01	1.0E-01		1.2E-04	2.0E-04	3.9E-04	7.7E-05		8.9E-03	1.7E-02			
Analyte Group	Substance	CASRN	C_{air} (mg/m^3)	C_{air} (mg/m^3)	C_{air} (mg/m^3)	C_{air} (mg/m^3)	C_{air} (mg/m^3)	C_{air} (mg/m^3)	C_{air} (mg/m^3)	C_{air} (mg/m^3)	C_{air} (mg/m^3)	C_{air} (mg/m^3)	C_{air} (mg/m^3)	C_{air} (mg/m^3)		C_{air} (mg/m^3)	C_{air} (mg/m^3)	C_{air} (mg/m^3)	C_{air} (mg/m^3)	C_{air} (mg/m^3)	C_{air} (mg/m^3)	C_{air} (mg/m^3)	C_{air} (mg/m^3)	C_{air} (mg/m^3)	C_{air} (mg/m^3)	C_{air} (mg/m^3)	C_{air} (mg/m^3)		
VOC	1,1,1-Trichloroethane	71-55-6	1.1E-03	1.6E-04	6.3E-03	7.6E-03	1.4E-04	5.5E-06	6.2E-04		6.2E-04	4.3E-05	4.0E-03	4.0E-03		6.4E-04	3.5E-05	8.8E-04	1.6E-03	8.2E-05	1.4E-06	1.4E-06		1.4E-04	1.2E-05	1.2E-03	1.2E-03		
VOC	1,1,2,2-Tetrachloroethane	79-34-5	2.9E-06	1.8E-07		3.1E-06	5.9E-08	2.2E-09			5.9E-08	1.7E-08		1.7E-08		1.6E-06	3.9E-08		1.7E-06	3.5E-08	5.5E-10			3.5E-08	4.6E-09		4.6E-09		
VOC	1,1,2-Trichloroethane	79-00-5	6.7E-06			6.7E-06	2.7E-07				2.7E-07					3.8E-06			3.8E-06	1.6E-07				1.6E-07					
VOC	1,1-Dichloroethane	75-34-3	1.9E-05	1.4E-04	1.5E-05	1.7E-04	2.1E-06	4.6E-06	1.4E-06		4.6E-06	3.6E-05	9.0E-06	3.6E-05		1.1E-05	3.0E-05	2.0E-06	4.3E-05	1.3E-06	1.1E-06	3.2E-07		1.3E-06	9.7E-06	2.6E-06	9.7E-06		
VOC	1,1-Dichloroethene	75-35-4																											
VOC	1,2,4-Trimethylbenzene	95-63-6																											
VOC	1,2-Dichloroethane	107-06-2	2.6E-05	5.6E-05	5.1E-06	8.6E-05	2.4E-06	1.6E-06	4.1E-07		2.4E-06	1.2E-05	2.7E-06	1.2E-05		1.4E-05	1.2E-05	7.1E-07	2.7E-05	1.4E-06	3.9E-07	9.4E-08		1.4E-06	3.3E-06	7.8E-07	3.3E-06		
VOC	1,2-Dichloroethene (total)	540-59-0	2.6E-04	2.3E-04	2.6E-04	7.5E-04	1.9E-05	5.3E-06	1.7E-05		1.9E-05	4.1E-05	1.1E-04	1.1E-04		1.4E-04	4.9E-05	3.6E-05	2.3E-04	1.1E-05	1.3E-06	4.0E-06		1.1E-05	1.1E-05	3.3E-05	3.3E-05		
VOC	1,2-Dichloropropane	78-87-5	5.3E-05	5.5E-05	8.3E-06	1.2E-04	1.4E-06	6.7E-07	2.9E-07		1.4E-06	5.3E-06	1.9E-06	5.3E-06		3.0E-05	1.2E-05	1.2E-06	4.3E-05	8.2E-07	1.7E-07	6.7E-08		8.2E-07	1.4E-06	5.6E-07	1.4E-06		
VOC	1,3,5-Trimethylbenzene	108-67-8																											
VOC	2-Butanone	78-93-3																											
VOC	2-Hexanone	591-78-6		1.2E-03	1.1E-05	1.2E-03		1.5E-05	3.8E-07		1.5E-05	1.2E-04	2.5E-06	1.2E-04			2.6E-04	1.5E-06	2.6E-04		3.7E-06	8.8E-08		3.7E-06	3.1E-05	7.3E-07	3.1E-05		
VOC	4-Methyl-2-pentanone	108-10-1	5.4E-05	1.4E-04	2.0E-03	2.2E-03	5.2E-06	4.0E-06	1.6E-04		1.6E-04	3.1E-05	1.0E-03	1.0E-03		3.0E-05	3.1E-05	2.7E-04	3.3E-04	3.1E-06	1.0E-06	3.6E-05		3.6E-05	8.5E-06	3.0E-04	3.0E-04		
VOC	Acetone	67-64-1	3.3E-05	2.1E-04	3.1E-03	3.3E-03	8.7E-06	1.4E-05	5.9E-04		5.9E-04	1.1E-04	3.9E-03	3.9E-03		1.9E-05	4.5E-05	4.3E-04	4.9E-04	5.2E-06	3.5E-06	1.4E-04		1.4E-04	2.9E-05	1.1E-03	1.1E-03		
VOC	Benzene	71-43-2	2.1E-04	1.4E-04	1.0E-03	1.4E-03	2.6E-05	5.0E-06	1.0E-04		1.0E-04	3.9E-05	6.8E-04	6.8E-04		1.2E-04	3.1E-05	1.4E-04	2.9E-04	1.6E-05	1.3E-06	2.4E-05		2.4E-05	1.1E-05	2.0E-04	2.0E-04		
VOC	Bromodichloromethane	75-27-4																											
VOC	Carbon Disulfide	75-15-0																											
VOC	Carbon Tetrachloride	56-23-5																											
VOC	Chlorobenzene	108-90-7	3.3E-05		8.5E-04	8.9E-04	3.4E-07		3.0E-05		3.0E-05		1.9E-04	1.9E-04		1.9E-05		1.2E-04	1.4E-04	2.0E-07		6.8E-06		6.8E-06		5.7E-05	5.7E-05		
VOC	Chloroethane	75-00-3																											
VOC	Chloroform	67-66-3	2.1E-04	1.9E-04	2.3E-08	4.1E-04	2.5E-05	6.4E-06	2.2E-09		2.5E-05	5.0E-05	1.4E-08	5.0E-05		1.2E-04	4.2E-05	3.2E-09	1.6E-04	1.5E-05	1.6E-06	5.0E-10		1.5E-05	1.4E-05	4.1E-09	1.4E-05		
VOC	Chloromethane	74-87-3																											
VOC	Ethyl Benzene	100-41-4	1.9E-04	8.1E-04	2.0E-03	3.0E-03	2.0E-05	2.4E-05	1.7E-04		1.7E-04	1.9E-04	1.1E-03	1.1E-03		1.1E-04	1.8E-04	2.8E-04	5.6E-04	1.2E-05	6.0E-06	3.9E-05		3.9E-05	5.1E-05	3.2E-04	3.2E-04		
VOC	Methylene Chloride	75-09-2	3.3E-03	4.8E-04	6.4E-05	3.9E-03	3.4E-05	5.8E-06	2.2E-06		3.4E-05	4.6E-05	1.5E-05	4.6E-05		1.9E-03	1.0E-04	8.9E-06	2.0E-03	2.0E-05	1.5E-06	5.1E-07		2.0E-05	1.2E-05	4.3E-06	1.2E-05		
VOC	Styrene	100-42-5	2.2E-05	3.0E-05	5.7E-04	6.2E-04	1.4E-06	6.1E-07	3.4E-05		3.4E-05	4.8E-06	2.2E-04	2.2E-04		1.2E-05	6.4E-06	7.9E-05	9.8E-05	8.4E-07	1.5E-07	7.7E-06		7.7E-06	1.3E-06	6.5E-05	6.5E-05		
VOC	Tetrachloroethene	127-18-4	3.0E-04	1.8E-03	2.9E-03	5.0E-03	2.4E-05	4.4E-05	2.0E-04		2.0E-04	3.5E-04	1.3E-03	1.3E-03		1.7E-04	3.9E-04	4.0E-04	9.6E-04	1.4E-05	1.1E-05	4.6E-05		4.6E-05	9.4E-05	3.8E-04	3.8E-04		
VOC	Tetrahydrofuran	109-99-9																											
VOC	Toluene	108-88-3	1.0E-03	9.0E-03	8.2E-03	1.8E-02	4.4E-05	1.4E-04	3.7E-04		3.7E-04	1.1E-03	2.4E-03	2.4E-03		5.8E-04	2.0E-03	1.1E-03	3.7E-03	2.6E-05	3.6E-05	8.5E-05		8.5E-05	3.0E-04	7.1E-04	7.1E-04		
VOC	Trichloroethene	79-01-6	2.4E-04	5.4E-04	1.2E-02	1.2E-02	2.3E-05	1.5E-05	8.9E-04		8.9E-04	1.1E-04	5.8E-03	5.8E-03		1.4E-04	1.2E-04	1.6E-03	1.9E-03	1.4E-05	3.6E-06	2.0E-04		2.0E-04	3.1E-05	1.7E-03	1.7E-03		
VOC	Vinyl Chloride	75-01-4		7.4E-06		7.4E-06		1.2E-07			1.2E-07	9.2E-07		9.2E-07			1.6E-06		1.6E-06		2.9E-08			2.9E-08	2.5E-07		2.5E-07		
VOC	Xylenes (total)	1330-20-7	4.9E-04	5.0E-03	3.7E-03	9.2E-03	2.0E-05	7.9E-05	1.7E-04		1.7E-04	6.3E-04	1.1E-03	1.1E-03		2.7E-04	1.1E-03	5.2E-04	1.9E-03	1.2E-05	2.0E-05	3.9E-05		3.9E-05	1.7E-04	3.2E-04	3.2E-04		
VOC	cis-1,2-Dichloroethene	156-59-2	8.1E-04	2.2E-06	1.6E-07	8.1E-04	9.4E-05	7.2E-08	1.5E-08		9.4E-05	5.7E-07	9.6E-08	5.7E-07		4.5E-04	4.7E-07	2.2E-08	4.5E-04	5.6E-05	1.8E-08	3.4E-09		5.6E-05	1.5E-07	2.8E-08	1.5E-07		
VOC	m,p-xylene	6777-61-2	2.0E-03	1.3E-05	9.7E-04	3.0E-03	2.0E-05	1.5E-07	3.4E-05		3.4E-05	1.2E-06	2.2E-04	2.2E-04		1.1E-03	2.7E-06	1.3E-04	1.3E-03	1.3E-05	3.9E-08	7.8E-06		1.2E-05	3.3E-07	6.5E-05	6.5E-05		
VOC	ortho-xylene	95-47-6	5.7E-04	6.1E-06	3.5E-04	9.3E-04	1.1E-05	7.4E-08	1.2E-05		1.2E-05	5.8E-07	8.0E-05	8.0E-05		3.2E-04	1.3E-06	4.9E-05	3.7E-04	6.7E-06	1.9E-08	2.8E-06		6.7E-06	1.6E-07	2.3E-05	2.3E-05		
VOC	p-Cymene	99-87-6																											
VOC	trans-1,2-Dichloroethene	156-60-5																											
SVOC	1,2,4-Trichlorobenzene	120-82-1	6.6E-07	1.3E-05		1.4E-05	2.1E-08	1.7E-07			1.7E-07	1.4E-06		1.4E-06		3.7E-07	2.8E-06		3.2E-06	1.2E-08	4.3E-08			4.3E-08	3.7E-07		3.7E-07		
SVOC	1,2-Dichlorobenzene	95-50-1	2.3E-05	2.5E-04	9.0E-07	2.7E-04	2.2E-07	3.1E-06	3.1E-08		3.1E-06	2.4E-05	2.0E-07	2.4E-05		1.3E-05	5.4E-05	1.2E-07	6.8E-05	1.3E-07	7.7E-07	7.2E-09		7.7E-07	6.5E-06	6.0E-08	6.5E-06		
SVOC	1,3-Dichlorobenzene	541-73-1																											
SVOC	1,4-Dichlorobenzene	106-46-7	9.0E-06	4.8E-06	3.6E-07	1.4E-05	8.3E-08	5.8E-08	1.3E-08		8.3E-08	4.6E-07	8.3E-08	4.6E-07		5.1E-06	1.0E-06	5.0E-08	6.2E-06	5.0E-08	1.5E-08	2.9E-09		5.0E-08	1.2E-07	2.4E-08	1.2E-07		
SVOC	2,2'-oxybis(1-Chloropropane)	108-60-1																											
SVOC	2,4,5-Trichlorophenol	95-95-4																											
SVOC	2,4-Dichlorophenol	120-83-2	6.8E-07			6.8E-07	6.2E-09				6.2E-09					3.8E-07			3.8E-07	3.7E-09				3.7E-09					
SVOC	2,4-Dimethylphenol	105-67-9	2.3E-07	8.2E-06	3.6E-06	1.2E-05	1.4E-08	1.7E-07	2.1E-07		2.1E-07	1.3E-06	1.4E-06	1.4E-06		1.3E-07	1.8E-06	4.9E-07	2.4E-06	8.4E-09	4.2E-08	4.9E-08		4.9E-08	3.6E-07	4.0E-07	4.0E-07		
SVOC	2,4-Dinitrotoluene	121-14-2			3.0E-07	3.0E-07			1.0E-08		1.0E-08		6.8E-08	6.8E-08				4.2E-08	4.2E-08			2.4E-09		2.4E-09		2.0E-08	2.0E-08		
SVOC	2,6-Dinitrotoluene	606-20-2		1.3E-06		1.3E-06		2.4E-08			2.4E-08	1.9E-07		1.9E-07			2.9E-07		2.9E-07		6.1E-09			6.1E-09	5.2E-08		5.2E-08		
SVOC	2-Chloronaphthalene	91-58-7																											
SVOC	2-Methylnaphthalene	91-57-6	3.1E-06	2.7E-05	2.0E-05	5.1E-05	1.0E-07	4.0E-07	8.5E-07		8.5E-07	3.1E-06	5.5E-06	5.5E-06		1.7E-06	5.9E-06	2.8E-06	1.0E-05	6.0E-08	1.0E-07	1.9E-07		1.9E-07	8.5E-07	1.6E-06	1.6E-06		
SVOC	2-Methylphenol	95-48-7	2.2E-06	2.2E-05	4.8E-06	2.9E-05	2.0E-08	2.7E-07	1.7E-07		2.7E-07	2.2E-06	1.1E-06	2.2E-06		1.2E-06	4.9E-06	6.7E-07	6.8E-06	1.2E-08	6.9E-08	3.9E-08		6.9E-08	5.8E-07	3.2E-07	5.8E-07		
SVOC	3,3'-Dichlorobenzidine	91-94-1																											
SVOC	4-Bromophenyl-phenylether	101-55-3																											
SVOC	4-Chloro-3-methylphenol	59-50-7																											
SVOC	4-Chlorophenyl-phenyl ether	7005-72-3																											
SVOC	4-Methylphenol	106-44-5	3.4E-06	8.3E-05	1.2E-05	9.8E-05	6.0E-08	1.0E-06	4.1E-07		1.0E-06	7.9E-06	2.7E-06	7.9E-06		1.9E-06	1.8E-05	1.6E-06	2.1E-05	3.6E-08	2.5E-07	9.4E-08		2.5E-07	2.1E-06	7.8E-07	2.1E-06		
SVOC	4-Nitrophenol	100-02-7			2.0E-07	2.0E-07			7.0E-09		7.0E-09		4.6E-08	4.6E-08				2.8E-08	2.8E-08			1.6E-09		1.6E-09		1.3E-08	1.3E-08		
SVOC	Acenaphthene	83-32-9	1.1E-06	4.7E-06	1.7E-07	6.0E-06	1.1E-08	5.7E-08	5.8E-09		5.7E-08	4.5E-07	3.8E-08	4.5E-07		6.4E-07	1.0E-06	2.3E-08	1.7E-06	6.3E-09	1.4E-08	1.3E-09		1.4E-08	1.2E-07	1.1E-08	1.2E-07		
SVOC	Acenaphthylene	208-96-8	4.3E-07			4.3E-07	4.0E-09				4.0E-09					2.4E-07			2.4E-07	2.4E-09				2.4E-09					
SVOC	Anthracene	120-12-7	3.3E-08	1.2E-07	8.1E-08	2.3E-07	3.0E-10	1.4E-09	2.8E-09		2.8E-09	1.1E-08	1.8E-08	1.8E-08		1.9E-08	2.6E-08	1.1E-08	5.5E-08	1.8E-10	3.6E-10	6.5E-10		6.5E-10	3.1E-09	5.4E-09	5.4E-09		
SVOC	Benzo(a)anthracene	56-55-3																											
SVOC	Benzo(a)pyrene	50-32-8																											
SVOC	Benzo(b)fluoranthene	205-99-2																											
SVOC	Benzo(g,h,i)perylene	191-24-2																											
SVOC	Benzo(k)fluoranthene	207-08-9																											
SVOC	Benzoic Acid	65-85-0	7.0E-06	2.1E-04	3.1E-04	5.3E-04	7.1E-08	2.6E-06	1.1E-05		1.1E-05	2.1E-05	7.0E-05	7.0E-05		3.9E-06	4.6E-05	4.2E-05	9.3E-05	4.3E-08	6.5E-07	2.4E-06		2.4E-06	5.6E-06	2.0E-05	2.0E-05		
SVOC	Benzyl Alcohol	100-51-6																											
SVOC	Butylbenzylphthalate	85-68-7																											
SVOC	Carbazole	86-74-8																											
SVOC	Chrysene	218-01-9																											
SVOC	Di-n-butylphthalate	84-74-2																											
SVOC	Di-n-octylphthalate	117-84-0																											
SVOC	Dibenzo(a,h)anthracene	53-70-3																											
SVOC	Dibenzofuran	132-64-9																											
SVOC	Diethylphthalate	84-66-2																											
SVOC	Dimethylphthalate	131-11-3																											

Table B-8b: Vapor Concentrations (mg/m^3) in Ambient Air from Soil - Hypothetical Future Land Use
ACS NPL Site, Griffith, Indiana

	Current/Future Scenario:		FUTURE													FUTURE												
	Location of Exposure:		AREA 5A				Area 5A									AREA 6				Area 6								
	Type of Activity at Emission Location:		Routine Industrial				Excavation					Construction				Routine Industrial				Excavation					Construction			
	Location of Emission:		From Area 1	From Area 2	From Area 3	Total At Area	From Area 1	From Area 2	From Area 3	From Area 4B	Max	From Area 2	From Area 3	Max		From Area 1	From Area 2	From Area 3	Total At Area	From Area 1	From Area 2	From Area 3	From Area 4B	Max	From Area 2	From Area 3	Max	
	C/Q (kg/m^3 per $kg/m^2/s$)		3.2E-01	9.7E-01	7.2E-01		2.0E-04	8.0E-04	1.7E-03	9.6E-05		3.3E-02	5.8E-02			1.8E-01	2.1E-01	1.0E-01		1.2E-04	2.0E-04	3.9E-04	7.7E-05		8.9E-03	1.7E-02		
Analyte Group	Substance	CASRN	C_{air} (mg/m^3)	C_{air} (mg/m^3)	C_{air} (mg/m^3)	C_{air} (mg/m^3)	C_{air} (mg/m^3)	C_{air} (mg/m^3)	C_{air} (mg/m^3)	C_{air} (mg/m^3)	C_{air} (mg/m^3)	C_{air} (mg/m^3)	C_{air} (mg/m^3)	C_{air} (mg/m^3)		C_{air} (mg/m^3)	C_{air} (mg/m^3)	C_{air} (mg/m^3)	C_{air} (mg/m^3)	C_{air} (mg/m^3)	C_{air} (mg/m^3)	C_{air} (mg/m^3)	C_{air} (mg/m^3)	C_{air} (mg/m^3)	C_{air} (mg/m^3)	C_{air} (mg/m^3)	C_{air} (mg/m^3)	
SVOC	Fluoranthene	206-44-0																										
SVOC	Fluorene	86-73-7	4.8E-07	2.5E-06	1.0E-07	3.0E-06	4.4E-09	3.0E-08	3.5E-09		3.0E-08	2.4E-07	2.3E-08	2.4E-07		2.7E-07	5.3E-07	1.4E-08	8.1E-07	2.7E-09	7.5E-09	8.1E-10		7.5E-09	6.4E-08	6.7E-09	6.4E-08	
SVOC	Hexachlorobenzene	118-74-1																										
SVOC	Hexachlorobutadiene	87-68-3																										
SVOC	Indeno(1,2,3-cd)pyrene	193-39-5																										
SVOC	Isophorone	78-59-1	7.6E-05	2.4E-04	4.8E-04	8.0E-04	7.0E-07	3.0E-06	1.7E-05		1.7E-05	2.4E-05	1.1E-04	1.1E-04		4.2E-05	5.3E-05	6.6E-05	1.6E-04	4.2E-07	7.5E-07	3.8E-06		3.8E-06	6.4E-06	3.2E-05	3.2E-05	
SVOC	N-Nitroso-di-n-propylamine	621-64-7																										
SVOC	N-Nitrosodiphenylamine	86-30-6			2.4E-07	2.4E-07			8.2E-09		8.2E-09		5.4E-08	5.4E-08				3.3E-08	3.3E-08			1.9E-09		1.9E-09		1.6E-08	1.6E-08	
SVOC	Naphthalene	91-20-3	2.2E-05	1.2E-04	1.1E-04	2.6E-04	4.3E-07	1.5E-06	4.0E-06		4.0E-06	1.2E-05	2.6E-05	2.6E-05		1.2E-05	2.7E-05	1.6E-05	5.5E-05	2.6E-07	3.8E-07	9.2E-07		9.2E-07	3.2E-06	7.6E-06	7.6E-06	
SVOC	Pentachlorophenol	87-86-5																										
SVOC	Phenanthrene	85-01-8																										
SVOC	Phenol	108-95-2	5.7E-06	5.0E-05	1.4E-04	2.0E-04	5.8E-08	6.1E-07	4.9E-06		4.9E-06	4.8E-06	3.2E-05	3.2E-05		3.2E-06	1.1E-05	1.9E-05	3.3E-05	3.5E-08	1.5E-07	1.1E-06		1.1E-06	1.3E-06	9.3E-06	9.3E-06	
SVOC	Pyrene	129-00-0																										
SVOC	bis(2-Chloroethyl) ether	111-44-4	8.2E-06	4.6E-05		5.4E-05	7.6E-08	5.6E-07			5.6E-07	4.4E-06		4.4E-06		4.6E-06	1.0E-05		1.5E-05	4.5E-08	1.4E-07			1.4E-07	1.2E-06		1.2E-06	
SVOC	bis(2-Ethylhexyl)phthalate	117-81-7																										
P/PCB	4,4'-DDD	72-54-8																										
P/PCB	4,4'-DDE	72-55-9																										
P/PCB	4,4'-DDT	50-29-3																										
P/PCB	Aldrin	309-00-2																										
P/PCB	Aroclor-1242	3469-21-9																										
P/PCB	Aroclor-1248	2672-29-6																										
P/PCB	Aroclor-1254	1097-69-1																										
P/PCB	Aroclor-1260	1096-82-5																										
P/PCB	Dieldrin	60-57-1																										
P/PCB	Endosulfan I	959-98-8																										
P/PCB	Endosulfan sulfate	1031-07-8																										
P/PCB	Endrin	72-20-8																										
P/PCB	Endrin aldehyde	7421-93-4																										
P/PCB	Endrin ketone	3494-70-5																										
P/PCB	Heptachlor	76-44-8																										
P/PCB	Heptachlor epoxide	1024-57-3																										
P/PCB	Methoxychlor	72-43-5																										
P/PCB	alpha-BHC	319-84-6																										
P/PCB	alpha-Chlordane	5103-71-9																										
P/PCB	beta-BHC	319-85-7																										
P/PCB	gamma-BHC	58-89-9																										
P/PCB	gamma-Chlordane	5103-74-2																										
INORG	Antimony	7440-36-0																										
INORG	Arsenic	7440-38-2																										
INORG	Barium	7440-39-3																										
INORG	Beryllium	7440-41-7																										
INORG	Cadmium	7440-43-9																										
INORG	Chromium 3+	6065-83-1																										
INORG	Chromium 6+	8540-29-9																										
INORG	Cobalt	7440-48-4																										
INORG	Copper	7440-50-8																										
INORG	Cyanide (total)	57-12-5																										
INORG	Lead	7439-92-1																										
INORG	Manganese	7439-96-5																										
INORG	Mercury	7439-97-6																										
INORG	Nickel	7440-02-0																										
INORG	Selenium	7782-49-2																										
INORG	Silver	7440-22-4																										
INORG	Thallium	7440-28-0																										
INORG	Vanadium	7440-62-2																										
INORG	Zinc	7440-66-6																										
TIC	Acetaldehyde	75-07-0																										
TIC	Acetophenone	98-86-2																										
TIC	Azobenzene	103-33-3																										
TIC	Butanol, 1-	71-36-3																										
TIC	Caprolactam	105-60-2																										
TIC	Chlorodifluoromethane	75-45-6																										
TIC	Cyclohexanone	108-94-1																										
TIC	Diethyl ether	60-29-7																										
TIC	Dioxane, 1,4-	123-91-1																										
TIC	Ethanol, 2-(2-butoxyethoxy)-	112-34-5																										
TIC	Hexane, n-	110-54-3																										
TIC	Phenol, 4,4'-(1-methylethylide	80-05-7																										
TIC	Phthalic anhydride	85-44-9																										